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U.S. Department of Agriculture

VOL. 1

1975 BUDGET EXPLANATORY NOTES

PR. 205.077
CURRENT SUBJECTS
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U.S. DEPT. OF AGRICULTURE
NATL. AGRIC. LIBRARY

DEPARTMENTAL ADMINISTRATION

SCIENCE AND EDUCATION PROGRAMS

Agricultural Research Service
Animal and Plant Health Inspection Service
Cooperative State Research Service
Extension Service
National Agricultural Library

AGRICULTURAL ECONOMICS

Economic Research Service
Statistical Reporting Service

PREFACE

General

The 1975 Explanatory Notes reflect a number of changes in format and information. Briefly the changes seek to improve the usefulness of the justifications by:

- adding data on end of year employment
- providing additional data with regard to reorganizations and transfers of activities between agencies and accounts of the Department
- providing an "Explanation of Program" section for each account
- providing additional geographic data in the "Status of Program" section in some accounts.

Project Statements

The obligations shown in the Project Statements are based on the appropriations and activities proposed in the 1975 budget estimates. In some Project Statements the activities are further divided into subcategories, reflecting a more detailed description of the work conducted under the appropriation items.

In those accounts where prior year balances are also available for obligation during the year, such amounts are shown in a separate Project Statement.

The amounts shown in Project Statements for the past year are taken directly from the accounting records to the maximum extent possible.

Statement of Available Funds and Man-Years

A statement is included for each agency, immediately following the introductory purpose statement, to reflect all sources of funds available to the agency and to show the related man-years from each source of funds.

These statements reflect the best available information at the time these Explanatory Notes were prepared (January 1974). However, it is not possible in many instances to determine in advance the extent to which agencies may be requested to perform additional services for other Federal and non-Federal agencies or organizations. Therefore, amounts of actual reimbursements and other funds received from sources other than appropriations directly to the agency may vary from those shown in the statements.

In those cases where the funds are not appropriated (reimbursements, trust funds, transfers, revolving funds, etc.), the dollar amounts shown represent actual or estimated obligations for the year.

In some instances there may be duplication of amounts shown. This results largely from cases involving reimbursements between different agencies within the Department, and where amounts are paid from appropriations to the Working Capital Funds. There is no duplication of the man-years shown.

Payments to General Services Administration for Space Costs

Transfers to General Services Administration for space rental in F.Y. 1974.

In accordance with authority provided in the 1974 Treasury, Postal Service, and General Government Appropriation Act, Federal agencies are required to transfer funds to GSA for additional rental space acquired during the past fiscal year. In the current year, the funds to cover this new space are transferred from the account requiring the space and shown as adjustments to the base. Therefore, the Budget estimates are also reduced by the amount of the transfer.

The adjustments in fiscal year 1974 for this purpose are as follows:

<u>Agency</u>	<u>Amount</u>
Departmental Administration	\$5,000
Agricultural Research Service	165,000
Animal and Plant Health Inspection Service	53,000
Statistical Reporting Service	5,000
Commodity Exchange Authority	12,000
Packers and Stockyards Administration	8,000
Federal Crop Insurance Corporation:	
Administrative and Operating Expenses	6,000
Farmers Home Administration, Salaries and Expenses	108,000
Soil Conservation Service:	
Conservation Operations	134,000
Watershed planning	2,000
River basin surveys and investigations	10,000
Watershed and flood prevention operations	14,000
Resource conservation and Development	13,000
Total, Soil Conservation Service	173,000
Agricultural Marketing Service:	
Marketing Services	23,000
Food and Nutrition Service:	
Child Nutrition Programs	29,000
Food Stamp Program	99,000
Total, Food and Nutrition Service	128,000
Forest Service:	
Forest protection and utilization	574,000
Total, United States Department of Agriculture	<u>1,260,000</u>

Fiscal Year 1975 Space Costs

In fiscal year 1975, the present system of one-time appropriation transfers to GSA to cover space costs will be eliminated. The Public Buildings Act Amendments of 1972 (P.L. 92-313) provide that beginning no later than fiscal year 1975, agencies will be required to make annual payments to General Services Administration to cover all GSA-controlled space which they occupy. The effect of this change is that the total cost of space occupied by an agency will now be shown in the agency budget rather than in the GSA budget.

The Explanatory Notes identify those increases requiring appropriation act funding within the justifications for each account. The following table summarizes the total cost of space for the Department in fiscal year 1975 and the method of financing these costs.

Fiscal Year 1975 General Services Administration Space Rental

Estimated Costs:

USDA direct payment to GSA (based on current billings)	\$59,376,000
Increased costs of reimbursements to other agencies due to space costs	<u>+2,770,000</u>
Total 1975 Space Costs	<u>\$62,146,000</u>

Financing:

Increased reimbursements from other agencies	\$4,254,000
Increased trust fund billings and other offsets (use of corporate fund, etc.)	5,300,000
Increase in 1975 appropriations	<u>52,592,000</u>
Total financed	<u>\$62,146,000</u>

Employment Ceilings

The Department of Agriculture's employment ceilings for June 30, 1974, are 80,173 full-time employees in permanent positions and 111,163 total employees. This represents an increase of 1,323 full-time permanent employees over the number which had been projected in the 1974 Budget submitted to the Congress in January of 1973. The increase results primarily from Congressional action on the 1974 Budget, Supplemental Appropriations for 1974, and mandatory workload increases. The total 1975 employment ceiling will remain essentially the same as the 1974 ceiling. Amounts for each agency are shown as the last entry on the "Available Funds and Man-Year" schedules. The following compares estimates in the 1975 Budget with the amounts reflected in the 1974 Budget.

	<u>1974</u>		<u>1975</u>
	<u>In 1974</u>	<u>Current</u>	<u>Estimate</u>
	<u>Budget</u>		
Full-time employment in permanent positions	78,850	80,173	80,210
Other	<u>30,990</u>	<u>30,990</u>	<u>30,990</u>
Total	<u>109,840</u>	<u>111,163</u>	<u>111,200</u>

Pay Costs in the 1975 Budget

The 1974 and 1975 columns of the 1975 budget reflect Civilian pay raises which were provided by Executive Orders numbered 11691 and 11739. In addition, actual and obligated 1974 wage board increases are shown in the budget.

Executive Order No. 11691, effective the first pay period in January 1973, provided an increase of approximately 5.14 percent for all General Schedule and related Federal employees. Executive Order No. 11739, effective the first pay period in October 1973, provided a 4.77 percent increase for the same employees. Wage board costs are based upon prevailing private wage rates in a given area and adjusted periodically by law. The 1974 column of the 1975 budget contains estimated wage board increases through June 30, 1974.

These justifications include 1974 pay costs and pay costs supplementals as adjustments to the 1974 appropriations in determining the base amounts for the 1975 changes. In this manner, these mandatory 1974 costs are not brought into the discussion of the 1975 increases. In the case of the increase effective in October 1973, however, the 1974 supplemental covers costs for only the 9 months from October 1973 through June 30, 1974. Funds needed to pay the full year costs in 1975 of this period from July through September are included in the 1975 increase as annualization of the October raise. The following tables reflect by year and the authority involved, the total costs of the raise for 1974, the amount of absorption in 1974, the 1974 supplemental request submitted with the Budget, the amounts included in 1975 to cover amounts absorbed in 1974 which cannot be absorbed in 1975, and the annualization of the October pay raise. The individual schedules reflect the amounts for each account.

	USDA (excluding Forest Service)	Forest Service	Total
	(In thousands)		
1974 Increased Costs:			
Executive Order 11691	\$57,332	\$15,898	\$73,230
Executive Order 11739	39,628	11,475	51,103
Wage Board	2,593	1,526	4,119
Total, 1974 Costs	99,553	28,899	128,452
Financing:			
Amounts absorbed by administrative action	-43,773	-5,739	-49,512
Amounts absorbed by transfers between accounts and increases in limitations requiring Congressional action	-6,015	- -	-6,015
1974 Supplemental for pay costs .	<u>49,765</u>	<u>23,160</u> a/	<u>72,925</u> a/
1975 Increased Cost:			
Increase to cover amounts absorbed in 1974 which cannot be absorbed in 1975	495	944	1,439
Annualization of pay costs under Executive Order 11739:			
Direct appropriation	13,462	3,185	16,647
Increase in administrative expense limitations or liquidation of contract authority	(1,294)	(1,251)	(2,545)
Total, 1975 Increase for pay costs	<u>(15,251)</u>	<u>(5,380)</u>	<u>(20,631)</u>

a/ Included is an appropriation of \$6,000,000 for liquidation of contract authority for Forest Roads and Trails.

Transfers in the Estimates in 1975

Subsequent to the submission of the Budget for 1974, a number of organizational changes were made. Following past procedure, these reorganizations are reflected in these justifications as transfers in the estimates (adjustments to the 1974 base amounts on which the 1975 changes are calculated.) The amounts shown as adjustments reflect the full year costs of the activity transferred even though the actual transfer may have been made at any time during the year. In this manner, the Committee is not asked to consider funding for programs which have already been approved in prior years.

The following table summarizes the functions and amounts transferred. The actual amounts involved are shown in the "adjustments" portion of the justification for each account and are explained in a footnote.

<u>Function</u>	<u>From</u>	<u>To</u>	<u>Annual Cost</u>
Informational activities	Office of Management Services) (Included in Departmental Administration in the 1975 Budget)	Economic Research Service Farmer Cooperative Service Office of the Secretary (Communications) Cooperative State Research Service Rural Development Service Statistical Reporting Service	\$324,100 133,200 65,100 68,900 65,000 78,000 <u>734,300</u>
Total transfer for informational activities			
Messenger services	Office of Management Services	Cooperative State Research Service	8,400
Informational activities	Office of the Secretary (Communications) Statistical Reporting Service Rural Development Service	Economic Research Service Economic Research Service Economic Research Service	9,000 215,000 2,003,000
Marketing research			
Economic Development Research Division			
Administration of P.L. 480, Export sales			
credit program and barter and stock-			
pling	Export Marketing Service	Foreign Agricultural Service	a/(3,620,000)
Non-metropolitan planning	Farmers Home Administration	Rural Development Service	130,000

a/ Funded by allocation from the Administrative Expense Limitation of the Commodity Credit Corporation.

In addition reorganization of Departmental Administration is proposed in Secretary's Memorandum No. 1836, dated January 9, 1974. Proposed transfers or allocations of funds under that Memorandum will be presented separately.

C O N T E N T S

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DEPARTMENTAL ADMINISTRATION

Purpose Statement

The Secretary of Agriculture, assisted by the Under Secretary, the Assistant Secretaries, members of their immediate staffs, and the Departmental staff offices, directs and coordinates the work of the Department. This includes developing policy, maintaining relationships with agricultural organizations and others in the development of farm programs, and maintaining liaison with the Executive Office of the President and members of Congress on all matters pertaining to agricultural policy.

Activities carried out by Departmental staff offices include:

- Overall administration of the budgetary and fiscal affairs of the Department;
- Staff and support services to agency programs in the management of real and personal property, procurement, contracts, and other administrative functions;
- Leadership in planning and administering the Department's management program including the effective use of automatic data processing equipment;
- The personnel management program of the Department;
- The activities of the administrative law judges, the judicial officer, and the hearing clerk unit;
- Coordination and supervision of the Department's equal opportunity responsibilities;
- General direction and supervision of the Department's information program;
- Audit and investigative services for Departmental programs;
- Legal services; and
- Management support services for small agencies and offices.

The general authority of the Secretary to supervise and control the work of the Department is contained in the Organic Act (7 U.S.C. 2201 - 2202).

Central Services. In addition to the staff activities indicated above the Office of the Secretary provides certain central services to the agencies of the Department. These services are financed under the Department's Working Capital Fund (7 U.S.C. 2235) and include personnel, payroll, supply, reproduction, visual information and computer services.

Organization. The Secretary's Office and the staff offices are located in Washington, D.C., with the following exceptions:

- Central payroll, personnel, and voucher services are provided by the National Finance Center at New Orleans;
- Central computer centers are located at Kansas City, New Orleans, and Fort Collins, Colorado;
- A representative of the Secretary is stationed with Federal Regional Councils at Boston, New York, Philadelphia, Atlanta, Chicago, Dallas, Kansas City, Denver, San Francisco and Seattle;
- Audit and investigative services are provided by regional offices located at New York; Atlanta; Chicago; Kansas City; San Francisco; Temple, Texas; and Hyattsville, Maryland.
- Legal services are provided at seventeen field offices.

Reorganization. Secretary's Memorandum No. 1836 (January 9, 1974) announced the Department's intention to reorganize several administrative and staff offices. This memorandum:

- Establishes an Office of Audit to report to the Assistant Secretary for Administration and an Office of Investigation to report to the Secretary.
- Establishes an Office of Management and Finance which combines the management analysis and information systems work formerly carried out by the Office of Information Systems, the budget and accounting work formerly carried out by the Office of Budget and Finance, and the small part of audit work which deals with the evaluation of program efficiency.
- Establishes an Office of Operations to combine the functions of the Office of Plant and Operations and the staff support for the consolidation of USDA county offices.
- Establishes an Office of ADP Systems to manage the Department's ADP activities.
- Reassigns administrative staff support services from the Office of Management Services to agencies and staff offices, excepting the Economic Research Service, Statistical Reporting Service, and Farmer Cooperative Service.

Further information on this reorganization will be provided in a later volume together with detailed justifications for each of the offices involved.

DEPARTMENTAL ADMINISTRATION

Available Funds and Man-Years
1973 and Estimated, 1974 and 1975

Item	Actual 1973		Estimated Available 1974		Budget Estimate 1975	
	Amount	Man- Years	Amount	Man- Years	Amount	Man- Years
Departmental Administration	\$40,222,949	1,929	\$42,530,400	1,960	\$47,832,400	1,950
Obligations under other						
USDA appropriations:						
For travel and other exps of admin. law						
judges in conducting regulatory hearings....	13,448	-	25,000	-	25,000	-
Health and other misc. : services for agencies : of the Dept.	203,292	7	267,800	10	267,800	10
Consideration of formal : employee grievances and adverse action appeals: for agencies of the : Department	57,330	3	93,000	4	93,000	4
Upward Mobility Prog....	11,162	1	104,000	7	104,000	7
Ag. Res. Serv. for : pesticides info.	24,033	-	25,000	-	25,000	-
Visitor Info. Center	22,240	2	20,000	2	20,000	2
Office of the General : Counsel - stenographic: and photocopying serv.:	7,636	-	800	-	800	-
Farmers & Home Admin. - : photocopying serv.	1,515	-	1,600	-	1,600	-
Food and Nutrition Serv. - purchase of food stamp: coupons from local banks needed in investigation activities	1,197	-	1,500	-	1,500	-
Salaries and Expenses, Ag. Stab. & Cons. Service : legal services on the : cons. reserve program ..	18,718	2	32,000	2	32,000	2
Ag. Credit Insurance Fund, FHA - Legal services on emergency credit loan : program	58,590	4	60,000	4	60,000	4
Special economic studies: performed by the Economic Res. Serv. for other : agencies on a reimbursable basis	41,931	3	21,300	1	17,200	1
Special crop and livestock studies and data proces- sing services performed by the Statistical Rep'tg. Service for other agencies on a reimbursable basis.	91,258	6	72,900	4	58,300	3
Working Capital Fund:						
Centralized supply, duplica- ting, mail and communica- tions services	4,450,144	219	5,131,171	219	5,712,171	219

	Actual 1973		Estimated Available 1974		Budget Estimate 1975	
	Amount	Man- Years	Amount	Man- Years	Amount	Man- Years
Central defense programs:	\$ 38,836	: 1	\$ 30,000	: 1	\$ 65,000	: 1
National Finance Center :	9,817,548	: 405	14,292,253	: 638	17,819,253	: 805
Employee Training :		:		:		:
Programs	165,942	: 2	195,250	: 3	195,250	: 3
Management and ADP :		:		:		:
Systems ^{a/}	7,739,229	: 209	15,253,512	: 426	16,186,512	: 426
Central visual produc- :		:		:		:
tion services	2,464,829	: 74	2,459,123	: 73	2,772,123	: 73
Centralized supply, :		:		:		:
duplicating, data :		:		:		:
processing and other :		:		:		:
services carried out :		:		:		:
by agencies serviced :		:		:		:
by OMS	848,594	: 55	1,381,900	: 73	1,807,600	: 67
Miscellaneous reimbur- :		:		:		:
sable services	88,135	: 6	98,600	: 6	98,800	: 6
Total, Other USDA :		:		:		:
Appropriations ...	26,165,607	: 999	39,566,709	: 1,450	45,362,309	: 1,633
Total, Agricultural :		:		:		:
Appropriations Bill	66,388,556	: 2,928	82,097,102	: 3,433	93,195,309	: 3,583
Other funds: :		:		:		:
Federal funds	695,071	: 30	804,700	: 33	830,500	: 33
Non-Federal funds	504,427	: 20	545,500	: 21	545,500	: 21
Total, Departmental :		:		:		:
Administration	67,588,054	: 2,978	83,447,309	: 3,487	94,571,309	: 3,637

End of Year Employment:	1973 Actual	1974 Estimated	1975 Estimated
Permanent full-time	2,898	3,326	3,304
Other	205	134	134
Total	3,103	3,460	3,438

a/ The Washington Data Processing Center, SRS, was transferred to the Office of Information Systems October 1, 1972. Related data processing work performed prior to that date is included as follows: FY 1973, \$954,000 and 24 man-years.

DEPARTMENTAL ADMINISTRATION

	<u>Direct</u> <u>Appropriation</u>	<u>Transfer</u> <u>from F&NS</u>	<u>Total</u>
Appropriation Act, 1974	\$36,136,000	\$4,250,000	\$40,386,000
Budget Estimate, 1975	<u>42,751,400</u>	<u>5,081,000</u>	<u>47,832,400</u>
Increase in Appropriation	<u>+6,615,400</u>	<u>+831,000</u>	<u>+7,446,400</u>
 Adjustments to 1974 appropriation:			
Appropriation Act, 1974	\$36,136,000	\$4,250,000	\$40,386,000
Transfer of information activities to other USDA agencies (net)	-669,200	- -	-669,200
Transfer of messenger services to CSRS ...	-8,400	- -	-8,400
Transfer from Comm. to ERS	-9,000	- -	-9,000
Transfer to GSA for space rental	-5,000	- -	-5,000
Proposed supplemental for pay costs	<u>+2,552,000</u>	<u>+284,000</u>	<u>+2,836,000</u>
Adjusted base for 1974	<u>37,996,400</u>	<u>4,534,000</u>	<u>42,530,400</u>
Budget Estimate, 1975	<u>42,751,400</u>	<u>5,081,000</u>	<u>47,832,400</u>
Increase in 1975 program level	<u>+4,755,000</u>	<u>+547,000</u>	<u>+5,302,000</u>

SUMMARY OF INCREASES

	<u>1974</u> <u>Adjusted</u>	<u>Increases</u>	<u>1975</u> <u>Estimate</u>
To provide for full USDA representatives at the Federal Regional Councils	1,259,430	+436,000	1,695,430
To strengthen contract compliance activities	1,882,600	+171,000	2,053,600
For higher printing, penalty mail and telecommunications costs	3,085,100	+319,000	3,935,568
To fund USDA Bicentennial projects	- -	+532,000	532,000
For contract and cooperative agreements with audit organizations	11,900,000	+1,000,000	12,900,000
Annualization of pay costs effective in Fiscal Year 1975	2,836,000	+445,000	3,281,000
GSA space rental costs	- -	+2,399,000	2,399,000
All others	<u>21,567,270</u>	<u>- -</u>	<u>21,567,270</u>
Total	<u>42,530,400</u>	<u>+5,302,000</u>	<u>47,832,400</u>

PROJECT STATEMENT
(On basis of adjusted appropriation)

Project	1973	1974 (estimated)	Increases	1975 (estimated)
1. Program and policy direction and coordination:				
(a) Office of the Secretary and Under Secretary	\$1,510,499	\$1,330,430	+\$637,000	\$1,967,430
(b) Assistant Secretaries	574,293	489,335	+88,000	577,335
2. Budgetary and financial administration	1,113,860	1,209,950	+115,000	1,324,950
3. General operations	821,272	997,637	+85,000	1,082,637
4. Management and ADP Systems	531,199	584,335	+45,000	629,335
5. Personnel Administration	1,063,148	1,321,343	+128,000	1,449,343
6. Regulatory hearings and decisions ..	347,508	393,370	+30,000	423,370
7. Equal opportunity	1,563,995	2,008,600	+287,000	2,295,600
8. Information services	2,976,074	3,226,100	+1,078,000	4,304,100
9. Audit	11,548,661	12,638,000	+1,571,000	14,209,000
10. Investigation	6,708,113	7,381,000	+312,000	7,693,000
11. Legal services	6,678,879	7,238,000	+601,000	7,839,000
12. Management support services	3,402,566	3,712,300	+325,000	4,037,300
Unobligated balance	1,382,882	-	-	-
Total available or estimate	40,222,949	42,530,400	+5,302,000	47,832,400
Transfer of information activities to other USDA agencies (net)	669,200	+677,600		
Transfer to ERS	8,500	+9,000		
Transfer to GSA	+18,351	+5,000		
Proposed supplemental for pay costs	-	-2,836,000		
Total appropriation	40,919,000	40,386,000		

The 1975 budget proposes the consolidation of all of the appropriation accounts included under the heading "Departmental Management" in the fiscal year 1974 Appropriation Act. The accounts consolidated are "Office of the Secretary," "Office of the Inspector General," "Office of the General Counsel," and "Office of Management Services." In order to reflect comparability between fiscal years 1974 and 1975, separate justifications are provided in a later volume of the Explanatory Notes for each of the combined accounts.

AGRICULTURAL RESEARCH SERVICE

Purpose Statement

The Agricultural Research Service was established by the Secretary of Agriculture on November 2, 1953, under the authority of the Reorganization Act of 1949 (5 U.S.C. 1332-15), Reorganization Plan No. 2 of 1953, and other authorities. In 1971 the plant and animal disease and pest control activities were transferred to Animal and Plant Health Inspection Service. It is responsible for conducting basic, applied, and developmental research on animal production, plant production, use and improvement of soil, water and air, and on marketing use and effects of agricultural products. The research provides the means for a safer more economical and more abundant supply of agricultural products for the nation.

The research applies to a wide range of goals, commodities, natural resources, fields of science and geographic climatic and environmental conditions. It is identified with approximately 300 research activities.

The Service directs research mutually beneficial to the United States and the host country which can be advantageously conducted in foreign countries through agreements with the foreign research institutions and universities. This program is carried out under the authority of Section 104(b) (1) and (3) of Public Law 480, the Agricultural Trade Development and Assistance Act of 1954, as amended.

Central offices for the Administrator and his staff are maintained in the Washington Metropolitan Area. The headquarters of the four Deputy Administrators, who manage the research program in the four Regions, are located at Beltsville, Md., Berkeley, Calif., New Orleans, La., and Peoria, Ill. Twenty-nine Area Directors are located within the geographic area for which they are responsible. The Agency's in-house research is conducted at numerous field locations in the States, the District of Columbia, Puerto Rico, the Virgin Islands, and in several foreign countries. Much of the work is conducted in direct cooperation with, or under cooperative agreements, contracts, and grants, to the State agricultural experiment stations or other State and Federal Agencies, both public and private.

Available Funds and Man-Years
1973 and Estimated, 1974 and 1975

	Actual		Estimated		Estimated	
	1973		1974		1975	
	Amount	Man-Years	Amount	Man-Years	Amount	Man-Years
Agricultural Research Service:						
Regular Appropriation	a/ \$190,881,766)		a/ \$188,126,400)		\$204,994,000)	
Transfer from		9,191		9,208		9,283
Section 32 Funds	15,000,000)		15,000,000)		15,000,000)	
Scientific Activities Overseas						
(Special Foreign Currency Program)	10,000,000	17	5,000,000	16	10,000,000	16
Total	215,881,766	9,208	208,126,400	9,224	229,994,000	9,299
Deduct allotments to other agencies:	-976,657	-32	-995,000	-33	-1,003,000	-33
Net	214,905,109	9,176	207,131,400	9,191	228,991,000	9,266
Reimbursements from:						
other USDA Appropriations:						
Animal and Plant Health Inspection Service - emergency programs and field station services	2,563,944	100	2,778,800	144	2,789,300	144
Food and Nutrition Service - improved dietary nutrition	165,065	10	235,800	16	236,700	16
National Agricultural Library-various services	48,118	2	428,600	9	430,300	9
Soil Conservation Service - field station services	17,289	--	69,100	--	69,100	--
Coordinated Departmental Services	80,879	3	31,400	1	31,500	1
Miscellaneous activities ..	41,590	2	78,200	1	78,500	1
Total other:						
USDA appropriations ..	2,916,885	117	3,621,900	171	3,635,400	171

Item	Actual		Estimated		Estimated	
	1973		1974		1975	
	Amount	Man- Years	Amount	Man- Years	Amount	Man- Years
Total, Agricultural Appropriation Bill:	217,821,994	9,293	210,753,300	9,362	232,626,400	9,437
Working Capital:						
Fund	6,198,290	322	1,017,000	--	--	--
Other Federal Funds	3,685,361	141	4,870,400	137	4,591,400	137
Non-Federal sources	532,832	17	697,700	20	749,200	20
Total, Agricultural Research Service	228,238,477	9,773	217,338,400	9,519	237,967,000	9,594

End-of-Year Employment:	1973	1974	1975
	<u>Actual</u>	<u>Estimated</u>	<u>Estimated</u>
Permanent Full-time	8,495	8,275	8,275
Other	<u>1,129</u>	<u>1,400</u>	<u>1,400</u>
Total included in ceiling .	9,624	9,675	9,675
Number of disadvantaged youth	450	400	400
Total	<u>10,074</u>	<u>10,075</u>	<u>10,075</u>

a/ Excludes \$2,000,000 reappropriation.

(a) Agricultural Research Service

Appropriation Act, 1974:

Direct appropriation	\$175,938,400
Transfer from Section 32 funds	<u>15,000,000</u>
Total, Appropriation Act, 1974	190,938,400 a/
Budget Estimate, 1975	<u>219,994,000</u> a/
Increase in appropriation	<u>+29,055,600</u>

Adjustments to 1974 Appropriation:

Appropriation Act, 1974	\$190,938,400
Proposed supplemental for increased pay and wage board costs	+12,353,000
Transfer to General Services Administration for rental of space	<u>-165,000</u>
Adjusted base for 1975	203,126,400
Budget Estimate, 1975	<u>219,994,000</u>
Increase in appropriation (adjusted)	<u>+16,867,600</u>

a/ Excludes reappropriation of \$2,000,000 of prior year funds for additional labor, subprofessional, and junior scientific help in the field.

SUMMARY OF INCREASES AND DECREASES
(on basis of adjusted appropriation)

	<u>1974</u>	<u>Increase or Decrease</u>	<u>1975 Estimate</u>
<u>Program changes:</u>			
Research on the nutrient composition of foods	\$2,240,600	: +\$576,000	: \$2,816,600
Determination and assessment of human nutrient requirements	3,523,200	: +695,000	: 4,218,200
Food consumption and dietary levels survey ...	--	: +208,000	: 208,000
Research on the control of water erosion and sedimentation	2,584,200	: +311,000	: 2,895,200
Improved oil crop production for domestic uses and exports	2,071,200	: +311,000	: 2,382,200
Reducing costs of red meats	17,416,300	: +3,112,000	: 20,528,300
Reducing the genetic vulnerability of crop ...	1,753,200	: +664,000	: 2,417,200
Research on the control of nitrogen nutrition in crops	1,491,000	: +311,000	: 1,802,000
Payment to GSA for rental of Government-owned or leased space ...	--	: +2,037,600	: 2,037,600
Pay cost annualization ...	12,353,000	: +2,222,000	: 14,575,000
All other	159,693,700	: --	: 159,693,700
Subtotal, Program	<u>203,126,400</u>	<u>+10,447,600</u>	<u>213,574,000</u>
<u>Facility changes:</u>			
Construction of research facilities	--	: +6,420,000	: 6,420,000
Total available	<u>203,126,400</u>	<u>+16,867,600</u>	<u>219,994,000</u>

PROJECT STATEMENT
(on basis of adjusted appropriation)

Project	1973	1974 (estimated)	Increase or Decrease	1975 (estimated)
1. <u>Research on animal production:</u>				
✓ (a) Animal production efficiency research	\$33,884,807	\$35,434,000	(1) +\$3,156,500	\$38,590,500
2. <u>Research on plant production:</u>				
✓ (a) Plant production efficiency research	63,830,708	66,072,000	(2) +3,284,500	69,356,500
✓ (b) Research on ornamentals, trees and turf, including forest insects and diseases	4,948,301	4,964,000	(3) +78,000	5,042,000
✓ (c) Tropical and sub-tropical agricultural research	- -	504,000	(4) +2,000	506,000
Total, Research on plant production	68,779,009	71,540,000	+3,364,500	74,904,500
3. <u>Research on the use and improvement of soil, water and air:</u>				
✓ (a) Soil and water conservation and development research	13,059,838	12,951,000	(5) +322,000	13,273,000
✓ (b) Research on watershed development	6,442,050	6,671,000	(6) +539,000	7,210,000
✓ (c) Research on pollution	12,083,166	13,250,000	(7) +289,000	13,539,000
Total, Research on the use and improvement of soil, water and air	31,585,054	32,872,000	+1,150,000	34,022,000
4. <u>Research on marketing, use and effects of agricultural products:</u>				
✓ (a) Marketing efficiency research	36,326,780	36,986,000	(8) +823,000	37,809,000
✓ (b) Research to expand agricultural exports	1,993,944	1,928,000	(9) +35,000	1,963,000
✓ (c) Food and nutrition research	6,040,441	6,933,000	(10) +1,602,000	8,535,000
✓ (d) Research to improve human health and safety	16,033,495	17,639,000	(11) +284,000	17,923,000
✓ (e) Research on consumer services	481,126	552,000	(12) +28,000	580,000
✓ (f) Research on housing	221,189	242,400	(13) +4,600	247,000
Total, Research on marketing, use and effects of agricultural products	61,096,975	64,280,400	+2,776,600	67,057,000
5. <u>Construction of facilities</u>	3,460,000	- -	(14) +6,420,000	6,420,000
6. <u>Contingency research fund</u>	- - a/	1,000,000	- -	1,000,000

Project	1973	1974 (estimated)	Increase or Decrease	1975 (estimated)
Unobligated balance	9,291,921:	- -	- -	--
Subtotal	208,097,766:	205,126,400:	+16,867,600:	221,994,000
Deduct reappropriation for Special Fund	-2,000,000:	-2,000,000:	- -	-2,000,000
Total, available or estimate	206,097,766:	203,126,400:	+16,867,600:	219,994,000
Transfer to General Services Administration :	:	:	:	:
for rental of space	+10,834:	+165,000:	:	:
Transfer from ARS 12X1400:	:	:	:	:
account for partial pay :	:	:	:	:
costs (unobligated :	:	:	:	:
balances from completed :	:	:	:	:
construction projects) ..	-216,000:	- -	:	:
Supplementals for pay :	:	:	:	:
and wage board costs ...:	-2,856,000:	-12,353,000:	:	:
Total appropriation	203,036,600:	190,938,400:	:	:

a/ Obligations of \$997,987 of the \$1,000,000 appropriated in 1973 are included in the projects above.

Note: The format of the project statement has been revised and is in accordance with the recommendations made during congressional hearings on the 1974 budget estimates. The table appearing on page 29 denotes the relationship between the current format for reporting on major program activities and that used in prior years.

EXPLANATION OF PROGRAM

Under the Agriculture-Environmental and Consumer Protection Appropriation Act of 1974, the Agricultural Research Service carries out the following activities:

1. Research on animal production.--Research is conducted to improve livestock productivity (including poultry) through improved breeding, feeding, and management practices and to develop methods for controlling diseases, parasites, and insect pests affecting them.
2. Research on plant production.--Research is conducted to improve plant productivity (including ornamentals, trees, turf, tropical and subtropical crops) through improved varieties of food, feed, fiber, and other plants; develop new crop resources; and improve crop production practices, including methods to control plant disease, nematodes, insects, and weeds.

Plant and Animal Production Efficiency Research is authorized by the Department of Agriculture Organic Act of 1862 (5 U.S.C. 511) and the Research and Marketing Act of 1946, as amended (7 U.S.C. 427, 427i). These laws authorize the acquiring and diffusing of information on agriculture and the research on production of agricultural commodities and matters related to agriculture. Other laws covering specific research are: Foot-and-Mouth Disease Research, Public Law 80-496, April 24, 1948, (21 U.S.C. 113a); Cattle Crub Research, P.L. 80-651, June 16, 1948, (21 U.S.C. 114e, f); Agricultural Engineering Research, P.L. 81-171, July 25, 1949, (42 U.S.C. 147a); Agricultural Programs in the Virgin Islands, P.L. 82-228, October 29, 1951, (48 U.S.C. 1409 m, n, o); Cooperation of States in USDA Programs, P.L. 87-718, September 28, 1962, (7 U.S.C. 450); Payment of Indirect Costs of Research, P.L. 87-638, September 5, 1962; (no code citation); Cooperative Research Projects, P.L. 88-250, December 20, 1963, 7 U.S.C. 450a; Public Law 69-799, March 4, 1927 (20 U.S.C. 191-194) which authorized the establishment and operation of the National Arboretum in Washington, D.C.; and under the Food for Peace Act, Title IV, Section 406(4), p. 12, the Secretary of Agriculture is authorized to conduct research in tropical and subtropical agriculture.

3. Research on the use and improvement of soil, water, and air.--Research is conducted to improve the management of natural resources, including investigations to improve soil and water management, irrigation, and conservation practices, and to determine the relation of soil types and water to plant, animal, and human nutrition. The research includes studies on hydrologic problems of agricultural watershed and the application of remote sensing techniques in meeting agricultural problems. Research is also conducted on agricultural pollution problems such as protection of plants, animals, and natural resources from harmful effects of soil, water, and air pollutants, and ways to minimize and utilize industry processing wastes of agricultural commodities.

This research is authorized by the Department of Agriculture Organic Act of 1862 (5 U.S.C. 511) and the Research and Marketing Act of 1946, as amended (7 U.S.C. 427, 427i). Other laws covering specific research are under Sections 1-6 of the Soil Conservation and Domestic Allotment Act (16 U.S.C. 590 a-f), and under Section 76 of the Strategic and Critical Materials Stock Piling Act (50 U.S.C. 980). Public Law Number 88-379, July 14, 1964, covers the Water Resources Research Act (7 U.S.C. 301-308). Public Law 92-500, October 18, 1972, covers the Water Pollution and Control Act. Statutory authority affecting this and related pollution research programs includes the National Environmental Policy Acts of 1969 and 1970 (Public Laws 91-190 and 91-224), and such predecessors as the Water Pollution Control Acts (P.L.'s 84-660, 87-88, etc.), the Water Quality Act (P.L. 89-234), and the Clean Water Restoration Act of 1966 (P.L. 89-753). For further reference, see Secretary Hardin's Memorandum No. 1695, 33 U.S.C. 466 and seq., Section 2, P.L. 89-234. In addition, there is the Water Quality Improvement Act of 1970

(P.L. 91-224), the Air Quality Act (P.L. 90-148, S. 780, and Section 2, as amended in 42 U.S.C. 1857-18571), the Resource Recovery Act of 1970 (42 U.S.C.A., S. 3251 et seq.), the Refuse Act (33 U.S.C., Sections 407, 407a, 411), the Rural Development Act of 1972 (P.L. 92-419, and the Federal Water Pollution Control Act of 1972 (P.L. 92-500).

4. Research on marketing, use and effects of agricultural products.-- Research is conducted to develop new and improved foods, feeds, fabrics, and industrial products and processes for agricultural commodities for domestic and foreign markets. Research is conducted on marketing of agricultural products. Studies concern the processing, transportation, storage, wholesaling and retailing of products, to reduce the costs of marketing, to maintain product quality, and to reduce losses from waste and spoilage.

Research is conducted on human nutritional requirements, composition, and nutritive value of food needed for consumers and for Federal, State, and local agencies administering food and nutrition programs.

Research is conducted on problems of human health and safety. Studies concern developing means to insure food supplies and products free from toxic or potentially dangerous residues from agricultural sources and processing operations, harmful chemicals, micro-organisms, and from naturally occurring toxins. The research conducted also includes studies concerning means to control insect pests of man and his belongings; prevent transmission of animal disease and parasites to man; reduce the hazards to human life resulting from pesticide residues, toxic molds, tobacco, and other causes; and, develop technology for the detection and destruction of illicit growth of narcotic-producing plants.

Research is conducted on consumer services to measure family use of resources, to identify economic problems of families; and to provide information on fabric performance and the use and care of clothing and household articles by consumers.

Research on housing is conducted to provide knowledge and technology to help bring about improved designs, material, and construction methods for both low-cost renovation and new construction of rural housing suitable for low-to-moderate-income rural residents.

This research is authorized by the Department of Agriculture Organic Act of 1862 (5 U.S.C. 511); Agricultural Adjustment Act of 1938 (P.L. 75-430), February 16, 1938; the Research and Marketing Act of 1946, as amended (7 U.S.C. 427, 427i), and Title 7, U.S.C., Agriculture, Chapters 17, 35, 38, and 55; The Agricultural Trade Development and Assistance Act of 1954 (7 U.S.C. 1691); Public Law 81-171, Agricultural Engineering Research (42 U.S.C. 1476); The Occupational Safety and Health Act of 1970 (P.L. 91-596) declared it to be the purpose and policy of the Congress to assure safe and healthful working conditions and to preserve our human resource, by (such means as) providing for research in the field of occupational safety and health, and by developing innovative methods, techniques, and approaches for dealing with the problems (Sec. 2). Standards, tolerances and regulations promulgated by USDA and other Federal departments under various statutes and dealing with food and natural fiber products, food additives, residues, and contaminants also support the USDA mission of consumer services and human resource development; and the White House Conference on Food, Nutrition, and Health (December 1969) strongly recommended that the USDA conduct a nationwide household food consumption survey every five years.

The projects carried out by this Service and the level of scientific effort directed toward these projects are enumerated below:

<u>Projects</u>	<u>Number of Scientists</u>		
	<u>1973</u>	<u>1974</u> <u>(estimated)</u>	<u>1975</u> <u>(estimated)</u>
Animal production efficiency research	321	316	316
Plant production efficiency research	1,067	1,021	1,021
Research on ornamentals, trees and turf, including forest insects and diseases	45	50	50
Tropical and subtropical agricultural research	--	2	2
Soil and water conservation and development research	202	196	196
Research on watershed development	90	93	93
Research on pollution	180	209	209
Marketing efficiency research	710	656	656
Research to expand agricultural exports	39	34	34
Food and nutrition research	80	90	90
Research to improve human health and safety	184	242	242
Research on consumer services	8	10	10
Research on housing	<u>2</u>	<u>1</u>	<u>1</u>
Total, Scientific effort	2,928	2,920	2,920

INCREASES AND DECREASES

(1) An increase of \$3,156,500 for animal production efficiency research, consisting of:

(a) An increase of \$328,000, for annualization of pay increases effective in FY 1974.

(b) An increase of \$369,500 for space rental costs pursuant to P.L. 92-313.

(c) An increase of \$2,459,000 for reducing the cost of red meats. (\$11,276,300 available in 1974)

Need for Increase: BEEF - VEAL

The price and consumption of red meats have been on the rise for the past several years and appear likely to continue in the United States and on a worldwide basis. Retail prices of beef and veal in the United States have increased 48 percent from 1960 to 1972. Per capita consumption increased 29 percent in the same period. Costs of producing red meats are high relative to those for other meats and proteins. Pounds of feed consumed (corn equivalent) per 100 pounds of liveweight production are: beef, 1,121; hogs, 584; broilers, 250; and turkeys, 538. The development of new research technology would permit livestock producers to keep production costs at a minimum. The principal beneficiaries would be the consuming public as lower production cost would reduce the prices of livestock and could be passed on to the market place. Present reproductive rates in terms of cattle reaching market of breeding age weight, relative to cows exposed to breeding, are estimated at only 78 to 80%. About 15% of cows fail to calve, and 5 to 7% of calves born, die. Integrated research programs aimed at increasing conception rates, increasing multiple births, and reducing pre- and postnatal deaths have a potential for increasing net reproductive rates to 90 and 110% in the future. Reducing excess carcass fat, now estimated at 20% for average choice carcasses, to 15% could save the industry another \$300-\$400 million per year.

SWINE

Major reproductive problems in swine include stress, embryonic death, artificial insemination, synchronization of estrus, induced and increased ovulation rate, reduced age at puberty, control of sex ratio, and lowering infertility in sows.

With increased size and intensity of swine production units, problems of disease and stress have become increasingly important. Stress from the effects of building systems, handling, climate, and other environmental factors increases the costs of producing pork. A condition known as the pork stress syndrome (PSS: cause unknown) results in death of market-weight hogs. Also each year over 20 million pigs born and valued at \$10 each are lost and never reach the market. The immediate postnatal environment, particularly temperature, is critical to the newborn pig. Diseases are costly to swine producers as different diseases occur at different stages in the life cycle of the pig. Neonatal, feeder, and market-weight pigs and the mature breeding herd can be affected. Research leading to prevention and control of diseases and parasites could improve the efficiency of production. Feed accounts for 70% of total pork production costs. Research leading to more precise information on the nutrient requirement for swine at all stages of the life cycle will be required to make significant improvement in the efficiency of pork production.

SHEEP

The current production rate in the national herd is approximately 95% lambs produced of breeding ewes one year old and older. Research progress in breeding, reproduction, management, and reduced mortality along with the use of the imported Finnsheep could increase efficiency of production by 50% as soon as 1980. Increased reproductive rate, along with solution of associated nutrition, management, and breeding problems and adequate predator control, could increase production efficiency enough to make the industry increasingly attractive to farmers and investors. An increase in production from the current 3 pounds per capita per year to 20 pounds or more is achievable in the next 20 years.

Plan of work: Initiate studies geared toward accomplishing the long range goals of the program which would concentrate on the development of (1) improving reproductive efficiency, including research on multiple births in beef and sheep and embryo survival in swine; (2) management systems for life cycle production in different resource situations; (3) determination of causative agents of calf scours and enteric diseases of cattle; (4) prevention of baby pig diseases--management systems encompassing the gestation and lactation periods via sanitation procedures, optimal nutritional conditions, rotation of pens, etc., in an attempt to control diarrhea; (5) reduction of perinatal calf losses; (6) studies of physical and chemical treatment of feeds, appetite, maintenance, digestion, metabolic processes and tissue deposition; (7) genetic variation for providing productive efficiency and product merit; (8) biological type as related to adaptation to feeds and environment; (9) procedures for effectively utilizing hybrid vigor; (10) alleviation of stresses from humidity and temperature; (11) reducing excess fat from carcasses; and (12) improving selection aids, techniques and breeding systems for sheep.

An additional \$653,000 for this specific program increase is proposed under the project-plant production efficiency research.

(2) An increase of \$3,284,500 for plant production efficiency research, consisting of:

(a) An increase of \$733,800, for annualization of pay increase effective in FY 1974.

(b) An increase of \$611,700 for space rental costs pursuant to P.L. 92-313.

(c) An increase of \$311,000 for research to improve oil crop production for domestic uses and exports. (\$2,071,200 available in 1974)

Need for Increase: The demand for soybeans has risen steadily both domestically and for export. The severe shortage this year from the rather unanticipated over-bidding for existing supplies has resulted in unusually high prices. While such high prices are not expected after new crop soybeans appear on the market, the future demand is likely to continue the upward trend of the past, both at home and abroad. Yields of soybeans have not kept pace with those of other crops. In addition, the trend toward increased yields has flattened out--even more so than for other crops. Nematodes have become an increasingly serious problem. More acreage could be devoted to soybean production, but this would probably be at the expense of feed grains in the long run. Demand for the latter appears to be increasing also, so there is a definite limit to reducing this acreage. Research to increase yields of both feed grains and soybeans are in order, but the most urgent need is for soybean yields.

Sunflowers have been a successful crop in world trade. As production has expanded in the United States, several problems have appeared. Insects and diseases have become more important. The head moth is one of the limiting factors to sunflower production in the South. A newly identified midge is estimated to have caused a 20 percent loss from 15,000 acres in the North. Oil content and fatty acid composition vary according to environment and genotype. Resistance to downy mildew, rust, verticillium wilt, and several insects has not yet been combined with cytoplasmic male-sterility and genetic fertility-restoration into high-combining inbred lines for commercial production of hybrids. These processes have been successfully carried out with other crops. Sunflowers have promise as a potential export crop earning credits in international trade.

Plan of Work: The proposed increase would be used to develop new technology which will reduce the costs of soybean and sunflower production through new varieties, improvements in genetics, inbred lines and hybrids, improved production practices, and control of diseases and insects. Research would be expanded in several areas simultaneously including: (1) genetics and breeding; (2) production practices; (3) potassium and phosphorus nutrition of the plant; (4) nitrogen fixation by symbiotic bacteria, which might enable manipulation of the total nutrition of the plant, and reduction of the expensive "wasting of energy" in photorespiration. The result would be more energy stored in the beans; (5) improved control of all pests--weeds, insects, pathogens and nematodes; and (6) improved harvesting equipment to reduce the current 10 percent harvesting losses. Expanded programs for sunflower research at College Station, Texas, and Fargo, North Dakota would cover developing high-combining inbred lines, resistance to the important diseases and insects, and utilization of cytoplasmic male-sterility and restorer genes. Attention would be given to developing improved hybrids of both high oil and confectionery types of sunflowers. Research on diseases and insects would also be expanded to include studies on biology and control. New work at Athens, Georgia, would involve genetics of protein, oil content, and fatty acid composition.

(d) An increase of \$653,000 for reducing the cost of red meats. (\$6,140,000 available in 1974)

Need for Increase: An important key to lowering costs of red meats is more efficient use of forages, pastures, and range to replace higher priced feed grains which are in short supply. Forage and range crops produce high quality feed at low cost per unit, and when used to provide more of the total feed intake, will reduce the cost of production of red meats. Interdisciplinary research would be conducted to improve forage and livestock production compatible with wise water and soil resource management and maintenance of environmental quality and wildlife enhancement.

Plan of Work: Initiate studies geared toward accomplishing the long range goals of the program which would concentrate on the following areas: (1) improvement of grasses and legumes for range and ration use by breeding and pest control, with emphasis on development of grasses and legumes that are known to increase livestock gains by 30% or more as a result of improved digestibility; (2) development of salt tolerant grasses for arid and semi-arid regions; (3) reestablishment of native grasses and other replacement vegetation adapted to specific soil and water needs; (4) study of the role of supplemental forage crops to maintain year-around supply of high quality low cost livestock feed; (5) improvement of nutritive value of forage species and increased forage quality, and (6) conversion of brush infested rangeland of low productivity to grazing lands of high productivity.

(e) An increase of \$664,000 for reducing the genetic vulnerability of crops.
(\$1,753,200 available in 1974)

Need for increase: The document, "Genetic Vulnerability of Major Crops," published by the National Academy of Sciences, concluded that our crops are vulnerable to attack by pests and production may be severely limited by unfavorable environmental stresses. Genetic uniformity is cited as the basis for epidemics, and the cultivars of our major crops rest on a precariously narrow genetic base. Prudent concern for future agricultural production dictates that the world's germplasm resources be preserved. The timing on this proposal is critical since many of the world's centers of origin of important plants are now being threatened because of population pressures and associated urban sprawl. Many valuable stocks may become extinct unless collected promptly, and that which has already been collected is in jeopardy because of inadequate support for those responsible for its maintenance. Without genetic variability, plant breeding accomplishments are impossible. Breeders must have much greater genetic diversity at their disposal than that represented in current cultivars if they are to reduce the probability of epidemics and cope with future problems.

Plan of work: The proposed increase would be used to intensify and strengthen the U.S. programs of plant germplasm collection, description, evaluation, exchange, and maintenance. Critical needs for plant explorations would be identified and explorations scheduled on a priority basis. The National Seed Storage Laboratory, Fort Collins, Colorado, would be staffed and funded to adequately perform their assigned functions. This Laboratory serves as a long-term preservation center, a source of valuable seed stocks, and conducts research on the long-term storage requirements of seeds. The Regional Plant Introduction Stations (State-Federal), the Federal Plant Introduction Stations, and the Germplasm Resources Laboratory would be adequately supported so that they could receive, describe, evaluate, and distribute germplasm. A national computerized system of information storage and retrieval for germplasm would be developed. Funds would be made available for germplasm curators to increase stocks and discharge their maintenance and distribution responsibilities.

(f) An increase of \$311,000 for research on the control of nitrogen nutrition in crops. (\$1,491,000 available in 1974)

Need for increase: In the past, nitrogen fertilizer was abundant and relatively cheap. As a result many farmers applied excessive amounts of nitrogen to their crops because there was no good method to determine the exact amount that would be needed. Much of the applied nitrogen was not needed or used by the crop and was, therefore, wasted. The increased demand for food has increased the need for nitrogen fertilizer. Unfortunately, the energy crisis has resulted in a shortage of nitrogen fertilizer. It is imperative that the fertilizer which is available be used in the most efficient manner for production of high quality food and fiber. Completion of the work on the laboratory method for determining the nitrogen supplying power of various soils across the country will enable farmers to utilize their fertilizer more efficiently. There is a need to better understand the role of nitrogen, phosphorus, and sulfur in plant growth and to develop improved management systems for utilizing these elements more efficiently.

The southeastern part of the U.S. has the most favorable climatic conditions for food and fiber production of any part of the country. However, much of this section has problems with subsoil acidity which restricts the rooting depth of plants, thus, making them more susceptible to drought and reducing the efficiency with which the plants utilize fertilizer and water. Correcting subsoil acidity is very difficult. Nevertheless, methods must be developed for

overcoming this problem to improve the efficiency of use of these soils. Plant species vary in their ability to withstand high levels of soil aluminum. More recently, it has been found that varieties within species also show ranges of tolerances. A balanced program involving soil management practices and plant breeding is needed to make more efficient use of the acid soils.

The rangeland is a very delicate system. Present research has shown that we can increase forage production and forage quality through nitrogen and phosphorus fertilization of native range grasses. This has increased the carrying capacity for cattle. Additional research is needed to determine optimum levels and balances of these two and other nutrients, such as magnesium, on the production and quality of forages. Studies are also needed to evaluate the impact of introduced species of forages on the rangeland as they might affect future management practices. It is now recognized that many of the diseases of grazing animals are directly related to the quality of the forage consumed by the animal. Grass tetany is a prime example. This disease, which often is fatal, results when the amount of potassium exceeds about 2.5 times the amount of calcium and magnesium in the forage. A more favorable balance of these elements in forage can be maintained through proper management practices. There is a need to develop criteria for establishing these management practices and for evaluating their effects on animal health. Sulfur deficiency in plants occurs over a large portion of the Western Region. This can be corrected through soil applications, but the addition of sulfur reduces the amount of selenium that is taken up by the plant. If an inadequate amount of selenium is present in forages, the animals consuming these face increased hazard from White Muscle Disease. Research is needed to develop management practices whereby adequate amounts of sulfur can be incorporated into the forage tissue without lowering the selenium level to a critical point.

Sugar beet growth and quality are very sensitive to nitrogen fertilization. While increasing nitrogen fertilizer increases plant growth, it reduces the amount of sugar in the beet. It is essential, therefore, that a method be developed whereby fertilization practices will produce optimum growth and sugar content. In order to do this we must be able to predict, accurately, the amount of nitrogen that will be supplied by the soil.

Plan of work: The proposed increase would be used for research to improve yields and quality of crops through more efficient use of fertilizers. Work would continue at Beltsville, Maryland to develop functional relations for estimating effects of soil water, temperature, and other factors on nitrogen transformation rates in soils. The validity of the estimates would be checked in field experiments on representative soils throughout the country. This work will advance current studies underway in predicting the amount of soil nitrogen available to plants from the soil. Experiments would be established at Fort Collins, Colorado to measure nitrogen uptake by the plant, movement within the plant, and return from the plant to the soil, transformations of such returned nitrogen in the soil, and the extent of recycling of mineralized nitrogen to the plant. Studies would also be conducted to evaluate the significance of atmospheric ammonia in supplying nitrogen to plants. Further studies would be conducted to evaluate the phosphorus supplying status of soils. Criteria would be developed for management practices needed to modify or reduce fertilizer applications when suitable tests indicate adequate supplies of phosphorus are present. This work would advance current studies on nitrogen uptake, translocation and transformation in a soil-plant system.

Studies would be conducted at Auburn, Alabama on the response of selected varieties of corn, sudangrass, and soybeans grown in acid soils which have been given varying amounts of treatment to overcome the subsoil acidity. Studies would also be conducted to determine the optimum depth of treatment required to counteract the adverse effects of subsoil acidity. Nutritional requirements of major crops would be studied to develop management practices leading to more efficient use of nitrogen and other fertilizers on the acid

soils. This work would advance current studies on factors inhibiting rooting depth of plants in soils in the Southeastern United States.

Studies would be conducted at Sidney, Montana to determine optimum rates and balances of nitrogen, phosphorus, and other nutrients needed for maximum efficiency of forages on the range. Species, other than native grasses, would be introduced and evaluated and management practices developed for the most promising. Studies would be evaluated by yield response, species composition, chemical analyses of forage quality, and grazing trials with animals. This work would advance current studies on the effect of fertilizers on range grasses.

Studies would be initiated at the U.S. Pasture Laboratory, University Park, Pennsylvania to evaluate the effect of soil management practices including levels, ratio and timing of fertilizer applications on the growth and quality of forages. Studies would also include the selection and breeding of forage species that would be of higher quality than existing forages under comparable fertility and climatic conditions. Animal feeding studies would be conducted to evaluate the effect of soil and plant variations on animal health. This work would advance current studies on soil fertility, climatic, seasonal and genetic variations on the growth and quality of forages.

At Twin Falls, Idaho, primary emphasis would be placed on studies leading to the development of a rapid method for evaluating the nitrogen supplying powers of sugar beet soils. Studies would also be conducted on the sulfur-selenium balance in alfalfa. This work would advance current studies on nitrogen and phosphorus requirements of sugar beets and sulphur and micronutrient requirements of alfalfa and other crops.

(3) An increase of \$78,000 for research on ornamentals, trees and turf, including forest insects and diseases, consisting of:

(a) An increase of \$55,000 for annualization of pay increases effective in FY 1974.

(b) An increase of \$23,000 for space rental costs pursuant to P.L. 92-313.

(4) An increase of \$2,000 for tropical and subtropical agricultural research, for annualization of pay increases effective in FY 1974.

(5) An increase of \$322,000 for soil and water conservation and development research, consisting of:

(a) An increase of \$148,200 for annualization of pay increases effective in FY 1974.

(b) An increase of \$173,800 for space rental costs pursuant to P.L. 92-313.

(6) An increase of \$539,000 for research on Watershed development, consisting of:

(a) An increase of \$73,400 for annualization of pay increases effective in FY 1974.

(b) An increase of \$154,600 for space rental costs pursuant to P.L. 92-313.

(c) An increase of \$311,000 for research on the control of water erosion and sedimentation. (\$2,584,200 available in 1974)

Need for Increase: Recent legislation directed to controlling the sediment losses from agricultural lands has emphasized the need for improved methods of controlling runoff and sediment yields from farmland and construction sites. Recent concerns about the movement of pesticides from cotton lands has made it imperative that the necessary chemical data be obtained to utilize existing hydrologic and sediment yield data to develop a model for predicting the amount of chemicals from cotton lands into impoundments. Erosion is a serious problem on steep tropical soils. Not only is erosion damaging agricultural soils but sediment accumulation in streams, reservoirs and estuaries is causing severe damage.

Plan of Work: The proposed increase would be used to support research as follows:

Lafayette, Indiana - the effectiveness of surface residues in reducing the runoff and erosion from several soil types and slopes with different runoff rates and velocities would be determined. The data would be used to test basic relationships which describe the stability of plant residues. This work would advance the current program concerned with defining the principles involved in soil detachment and transport by water movement across or through the soil. Recent accomplishments include defining the conditions which cause a mulch cover to become unstable and fail as an erosion control measure.

Oxford, Mississippi - sediment movement from cultivated lands into Delta impoundments would be determined and chemical analyses would be made to determine the degree of chemical movement from cotton lands into impoundments. This work will advance the current program directed to developing methods for predicting sediment amounts and sources in watersheds and river basins. Recent data indicates that the major sediment sources in the Yazoo and Coldwater basins are cultivated lands, gullies, roads, and stream channels. On these watersheds, channel erosion accounted for 16-25% of the sediment yield.

Rio Piedras, Puerto Rico - the effect of fertilizer treatment, plant populations, and spacing and tillage on the amount of erosion and runoff from steep slopes will be determined. These data will be used to develop effective management systems for producing high yields of tropical crops on steep soils while conserving soil and water resources. This work will advance the current program concerned with developing and testing management systems which utilize seeding techniques, crop residues, plant cover, and tillage techniques to reduce erosion and runoff from typical tropical soils. Recent results show that runoff and erosion on densely planted heavily fertilized plantain planted on steep soils were very small.

(7) An increase of \$289,000 for research on pollution, consisting of:

(a) An increase of \$166,000 for annualization of pay increase effective in FY 1974.

(b) An increase of \$123,000 for space rental costs pursuant to P.L. 92-313.

(8) An increase of \$823,000 for marketing efficiency research, consisting of:

(a) An increase of \$462,700 for annualization of pay increase effective in FY 1974.

(b) An increase of \$360,300 for space rental costs pursuant to P.L. 92-313.

(9) An increase of \$35,000 for research to expand agricultural exports, consisting of:

(a) An increase of \$21,400 for annualization of pay increase effective in FY 1974.

(b) An increase of \$13,600 for space rental costs pursuant to P.L. 92-313.

(10) An increase of \$1,602,000 for food and nutrition research, consisting of:

(a) An increase of \$29,200 for annualization of pay increases effective in FY 1974.

(b) An increase of \$93,800 for space rental costs pursuant to P.L. 92-313.

(c) An increase of \$576,000 for research on the nutrient composition of foods. (\$2,240,600 available in 1974)

Need for Increase: Comprehensive up-to-date information on the composition and nutritive value of foods is required on a continuing basis for use by the food industry in the nutrient labeling of food; evaluation of diets, food distribution programs, and food supplies; for the development of family food plans, guidance materials for use in consumer education; and for planning special diets for therapeutic use. The USDA tables of reference data on composition of foods which are the major source of such information, are rapidly becoming outdated and incomplete because of advances in knowledge of human dietary needs for a continually increasing number of nutrients.

An improved system must be developed to expedite the derivation and rapid release of reliable and up-to-date information on composition and nutritive value of foods in order to be adequately responsive to the needs of the general public.

Plan of Work: Part of the proposed increase would be used to develop additional data on nutritive value of foods, and the development of more rapid and efficient methods than can presently be employed for locating, storing, critically evaluating, retrieving, and disseminating data. Computer systems for storage and retrieval of data would be adapted to the particular mission of deriving and disseminating data on the nutrients in food. A National Nutrient Data Center located at Hyattsville, Maryland, including a greatly expanded food composition data bank would be established for maintaining the reference data on an up-to-date basis. The remainder of the proposed increase would be used at Beltsville, Maryland to provide for expansion of research on those foods and nutrients in which the reference tables are most inadequate. In analyzing for nutrients in major food commodities, the effects of raw materials variation, processing, and storing on nutrient composition would be determined. An urgent part of this program would be the development of improved analytical methods for very rapid determination of nutrients in foods.

(d) An increase of \$695,000 for determination and assessment of human nutrient requirements. (\$3,523,200 available in 1974)

Need for Increase: Among the several prominent risk factors that can lead to death from heart disease in man, nutrition is one that is clearly recognized, yet little understood. The fats in our foods appear to play an important role, and the fatty materials in our blood can alert one to possible risks. The appalling statistics show that over 50% of the deaths in 1974 in the U.S. will be from heart disease. This urges us to derive more definitive diet recommendations and more promising food technology. A major block has been to

assess in man the consequences of moderate changes in food or in diet patterns. New techniques which have not yet been used now permit metabolic studies in man of some of the fats in our food that have been altered during processing. These new approaches can lead to resolution of some of the perplexing questions now standing in the way of sound diet advice.

Lack of information concerning which minerals are necessary for man, and in what amounts, is preventing our taking the necessary steps to protect the health of the American consumer. For most of the trace mineral elements known to be required, dietary recommendations have not been established. Food sources also need to be identified, wherein the trace nutrient is in a form highly available to man. ARS has the world's outstanding research team in trace mineral nutrition to address itself to these urgent needs, to exploit new leads, and to hasten needed dietary guidance.

These studies, which are oriented toward providing food with proper nutrient requirements to attain and maintain a well nourished healthy population complement the work of the Department of Health, Education and Welfare which is primarily oriented to alleviation of disease symptoms and diet therapy for medical and surgical patients.

Plan of Work: The proposed increase would be used to support research in the following areas:

- (1) To initiate research to develop a new technique for visualizing dietary effects in man. Nutrition studies of arteriosclerosis, which can lead to heart disease in man, requires a simple, safe non-surgical method for observing changes in the arterial wall. This technique, a sound echo measurement would be used in rabbits and swine with currently available experimental instruments. The reliability of these studies would be validated and applied to studies in man. The sound echo measurement would be related to changes in level of blood fats and cholesterol in the blood as induced by diet. The studies would permit the determination of whether or not diet change over a period of weeks or months could reverse early arteriosclerosis in man. These studies would be located at Beltsville, Maryland.
- (2) To initiate research to determine the effect of "unnatural" forms of fats in the human diet. Different chemical forms of certain fatty acids which occur in hydrogenated soybean oil would be labeled or tagged with non-radioactive, heavy hydrogen, which may safely be fed to humans. The rate of metabolism of these unnatural fatty acid forms as well as the natural compounds will be compared to determine if specific forms are selectively stored and transported within the body, which could lead to damage in the heart and other organs. This would permit assessment of the significance of "unnatural" forms in human diets. These "unnatural" fats are formed during catalytic hydrogenation or "hardening" of vegetable oils. This processing step improves flavor and storage stability and increases suitability for use in products such as margarines, shortenings, salad and cooking oils. Since Americans are consuming large amounts of hydrogenated fats which contain significant amounts of "unnatural" forms of the fat, human metabolism studies are needed to determine if the results of tests concerning metabolism of fats in animals can be assumed to apply to humans, and to evaluate the nutritional safety of these "unnatural", unsaturated fatty acid forms. These studies would be located at Peoria, Illinois.
- (3) To determine human dietary requirements for minerals and their availability in foods. Analytical capability for trace mineral elements (elements that occur only at extremely low levels) would be developed to assess composition of various foods and commodities, and to support nutritional studies on body fluids and tissues in animals and man. The requirements for and availability from food of various trace elements, such as chromium, iron,

tin, selenium, and vanadium will be studied. For many of these, procedures are ready for human studies. Subjects would be drawn initially from college age groups. Dietary interrelationships among the minerals would be considered, since this frequently alters the nutritional requirement. These studies will be conducted at Beltsville, Maryland. Collaborative research using human volunteers would include the special facilities for clinical nutrition research at the Grand Forks, North Dakota Laboratory. At this location, other studies would use carefully controlled marginal deficiency states to define the minimum amount of certain trace elements required by man, and the consequences of inadequate intake.

- (e) An increase of \$208,000 for a food consumption and dietary levels survey.
(No funds available in 1974)

Need for Increase: The 1969 White House Conference on Food, Nutrition, and Health recommended that nationwide food consumption surveys be made every five years. The most recent surveys were conducted in 1965-66. With rapid changes taking place in all aspects of food and nutrition delivery systems and the increasing concern for improved nutritional health, information on food consumption and dietary levels of households and individuals is needed on a continuing basis. Current food choices may be considerably influenced by the substantial increase in disposable income since 1965 and by the multitude of new products available. Up-to-date facts on the changes in food consumption patterns are essential for evaluating the effectiveness in improving diets through educational and other governmental programs. The data will serve as a basis for developing public information program and policies relating to food production, distribution, and regulatory activities, and for estimating the potential demand for agricultural products. The food survey of individuals is needed to determine how nutritionally satisfactory is the food intake of people at various stages of the life cycle and who the people are who need more food or food of better nutritional quality.

Plan of Work: The proposed increase would be used at Hyattsville, Maryland to support a small ARS team who would plan and monitor a nationwide food consumption and dietary level survey which would be supported by contract with funds to be provided by Food and Nutrition Service. Surveys of food consumption of households and individuals would be conducted. Changes in methodology from 1965-66 surveys would be made as a result of the experience in the previous surveys and the results of a methodological study nearing completion. Household data would be collected for one week's food use. The food intake of individuals would be obtained for a three-day period--a one day recall supplemented by a two-day mail-in food record. In both surveys there would be an oversampling of low income and rural farm households. Means to expedite the release of the results of these surveys would be developed.

- (11) An increase of \$284,000 for research to improve human health and safety consisting of:

(a) An increase of \$192,600 for annualization of pay increases effective in FY 1974.

(b) An increase of \$91,400 for space rental costs pursuant to P.L. 92-313.

- (12) An increase of \$28,000 for research on consumer services, consisting of:

(a) An increase of \$6,700 for annualization of pay increases effective in FY 1974.

(b) An increase of \$21,300 for space rental costs pursuant to P.L. 92-313.

(13) An increase of \$4,600 for research on housing consisting of:

(a) An increase of \$3,000 for annualization of pay increases effective in FY 1974.

(b) An increase of \$1,600 for space rental costs pursuant to P.L. 92-313.

(14) A total increase of \$6,420,000 for the construction of facilities. The increase would be distributed as follows:

(a) An increase of \$1,400,000 for the conversion of the two sewage treatment plants and renovation of sewage and water lines at Beltsville, Maryland.

Need for Increase: The proposed increase would be used for increasing the capacity of and adding tertiary treatment to the present two sewage treatment plants and for modernization of sewage and water lines throughout the Agricultural Research Center.

The present sewage disposal system does not meet standards set by the Potomac River-Washington Metropolitan Enforcement Conference and the Environmental Protection Agency. The current deadline for meeting the standards is January 1, 1975. Increasing the capacity of the sewage system will meet the urgent needs of the recently constructed Law Enforcement Training Center of the Department of the Treasury. The latter will contribute \$100,000 in addition to the above requested amount toward construction of the sewage treatment facilities.

All activities at the Agricultural Research Center are serviced entirely or in part by the present sewage system consisting of connection lines and two plants providing secondary treatment with discharge into nearby streams. When the system was built over 30 years ago, it was adequate in all respects concerning state and Federal laws governing effluent requirements. But new standards set by the Environmental Protection Agency make additional processing to eliminate nitrogen and phosphate necessary. There are countless breaks in the sewage connection lines and infiltration of ground water far exceeds permissible amounts thus overtaxing the treatment plants. While the system currently provides 20,000 gallons/day capacity to the recently constructed Law Enforcement Training Center, it cannot meet their future requirements for 100,000 gallons/day capacity. In addition, a number of animal barns are not now connected to the sewage system thus contributing to polluted run-off. The east side of the Research Center is in need of a water distribution grid system. The existing system which was installed in the late 30's does not provide for any expansion of facilities or flexibility for providing an alternate method of furnishing water to a given system by back-feeding in the event of a water main break. Also, fire protection is inadequate for a number of buildings which house valuable equipment and machinery. The lines are not large enough to provide a sufficient quantity of water for fire fighting.

The statutes governing Federal installations provide no alternatives except abandonment of the present research and headquarters facilities which is not deemed desirable or feasible. Also, if the present sewage system is not brought into conformance with the requirements set by EPA, the Law Enforcement Training Center will be forced to construct its own sewage treatment system at a far higher cost or abandon their operations. Since the Washington Suburban Sanitary Commission will not take additional connections to the sewer systems, there is no way to meet the requirements of EPA except by the construction of facility additions.

Many research activities are conducted at the Agricultural Research Center. These are advantageous because of research and facilities of other agencies in the area. Headquarters offices are strategically located for access by administrators of the research programs.

The recognition of obnoxious environmental problems in recent years has focused attention of nutrient control in sewage disposal systems. Accordingly, the Environmental Protection Agency has imposed new standards for operation of the two plants at the Center, requiring waste removal prior to discharge as follows: 96% of the Biochemical Oxygen Demand 85% of the total nitrogen and 96% of the total phosphorous. The results of a feasibility study indicate the best alternative is to construct a tertiary system consisting of lagoons. The resultant effluent would be subject to evaporation, introduced into nearby streams or used for irrigation of adjacent cropland on the Center. The renovation of the present water main system would provide sufficient water to all facilities in the event of line breaks or for fire protection for all facilities.

(b) An increase of \$5,020,000 for Phase II construction at the U.S. Meat Animal Research Center, Clay Center, Nebraska.

Need for increase: The proposed increase is for Phase II construction which includes an abattoir, a meats research laboratory, and an engineering laboratory to complement the Phase I facilities now completed for meat animal production research. Phase II construction will provide slaughter facilities, chiller, cooler, freezer and cutting facilities and laboratories for engineering, chemistry, instruments for determining quality and grade, systems analysis, and an environmental center for research on waste disposal.

Current research activities that would be conducted in whole or in part include:

- a. Improve the consumer acceptability of beef carcasses through production practices.
- b. Improve the consumer acceptability of pork by changing the fat/lean ratio of the carcass.
- c. Improve the consumer acceptability of lambs through production practices.
- d. Controlling microbiological, physical, and chemical deterioration of meat products.
- e. Improve procedures and evaluation of instruments to determine the quality of meat products for grading and other marketing uses.
- f. Improved facilities, equipment, and work methods for cattle, sheep and swine production.
- g. Wholesomeness of animal products.
- h. Animal waste disposal.
- i. Other activities having a major effect on production efficiency will also be serviced by these laboratories.

These proposed buildings have been planned as a part of a large, integrated unit at the U.S. Meat Animal Research Center, to study improvement of livestock production efficiency, the processing of forage, and the closely related problems of meat quality and nutritive value.

The magnitude of the total planned research effort at this location, of which the two buildings are a part, is believed to be near optimum, taking into account land resources, total research needs, and availability of highly trained and competent scientists. The balance also recognizes the scope of the research at this location and at other locations having geographical and climatic differences.

Research at the U.S. Meat Animal Research Center will be directed toward developing technology that can be used by the beef cattle, sheep and swine industries to reduce production costs of edible meat and improve quality, thereby benefiting consumers in all parts of the United States.

The program is designed to investigate areas not now being adequately studied and to complement existing research conducted elsewhere by the U.S. Department of Agriculture and the State Agricultural Experiment Stations.

The research program will be an integrated effort involving the major scientific disciplines that relate to animal agriculture. This includes feed production, harvesting, handling, storage, and utilization; animal housing and waste and waste management; breeding and reproduction; feeding; meat technology and management systems as they relate to reproduction; and growth, feed efficiency, and carcass characteristics. Major problem areas to receive primary attention are: (1) reproduction; (2) feed efficiency; and (3) carcass merit.

NEW FORMAT FOR FINANCIAL DATA IN THE 1975 ESTIMATES

On July 1, 1972, certain improvements in the Agency Accounting System resulted in a more effective coordination of program planning and financial structure. The ARS financial management system uses one data collection unit to plan, record, classify and report financial and personnel resource data and summarizes such data directly to the present program and organization structures. This provides a wide array of financial data to aid line and staff managers in carrying out the Agency's policies and objectives. The results of these improvements enables a more comprehensive review and analysis of all major programs underway within the Agency. The financial data is presented in the format that ARS uses for planning, conducting and evaluating its programs.

The new format for financial program data is presented in the following table.

Revision of Activity Structure
(Based on total estimated available for fiscal year 1974)

FORMER STRUCTURE	CURRENT STRUCTURE									
	Total	Estimated	Research	Research	Research	Research	Research	Research	Research	Contingency
		Available	on animal	on plant	and improvement	of	ing, use and effect	Construction	of	Research
Financial Project	1974	production	production	soil, water, and air	of agri. products	facilities	fund			
Farm research	\$139,454,100	\$35,287,700	\$70,525,600	\$27,490,100	\$6,150,700					
Utilization research										
and development	44,344,200	146,300	721,400	5,381,900	38,594,600					
Nutrition and consumer										
use	6,149,600	-	-	-	6,149,600					
Marketing research	11,643,800	-	135,000	-	11,508,800					
Research and development										
on the eradication of										
narcotic-producing										
plants	1,876,700	-	-	-	1,876,700					
Coordination of depart-										
mental and interdepart-										
mental activities										
relating to pests and										
their control	158,000	-	-	158,000	-					
Construction of										
facilities	-	-	-	-	-					
Contingency research										
fund	1,000,000	-	-	-	-					\$1,000,000
TOTAL estimated	205,126,400	35,434,000	71,540,000	32,872,000	64,280,400					1,000,000
available 1974										

STATUS OF PROGRAM

The Service conducts research to provide the means for a safer, more economical, and more abundant supply of agricultural products for the nation. The Service uses coordinated, interdisciplinary approaches to perform basic and applied research in the fields of livestock, plants, soil-water-and-air resources, marketing and use of agricultural products, food and nutrition, consumer services and agricultural health hazards.

Research is conducted at numerous locations in the States, Puerto Rico, Virgin Islands and in several foreign countries. Much of the work is conducted in cooperation with the State agricultural experiment stations, other State and Federal agencies, and private institutions.

RESEARCH ON ANIMAL PRODUCTION

Current activities: Research is conducted to improve livestock productivity (including poultry) through improved breeding, feeding, and management practices and to develop methods for controlling diseases, parasites and insect pests affecting them.

Prices and consumption of meats have risen very rapidly in the past several years and appear likely to continue. This is not only in the United States, but worldwide. Consequently, there is a need for new technology to enable livestock producers to reduce their costs. As these lower costs are passed on in the market place, consumers will benefit.

Selected examples of recent progress: A description of these examples follows this index.

Animal Production Efficiency Research

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| 1. Biological type important in beef cattle | 7. Pathogenesis and transmission of foot-and-mouth disease (FMD) |
| 2. Dairy breeding improvement programs | 8. Deformity in calves produced by poison hemlock extract |
| 3. Prostaglandin (a hormone) can be used to control estrus and ovulation in cattle and sheep | 9. A method for classifying field strains of infectious bronchitis virus (IBV) |
| 4. Finnsheep breed increases lamb production | 10. Bovine C type virus suspected to be a bovine leukemia virus |
| 5. Discovery of repellents for predators | 11. Production of diagnostic antigen for equine infectious anemia |
| 6. Chances for effective artificial insemination in swine continue to improve | |

Animal Production Efficiency Research

1. Biological type important in beef cattle. In a comprehensive germ plasm evaluation program at the Meat Animal Research Center, Clay Center, Nebraska, involving a wide range of biological types of cattle, as represented by several breed groups, an evaluation of differences in total digestible nutrients (TDN) required per pound gain revealed that some biological types were 13 percent more efficient than others. Furthermore, a difference of 18 percent in average daily gain existed among the different biological types. Generally, faster gaining types were more efficient in their gains. These differences reflect part of the potential that exists for increasing beef production per unit of feed and other resource use. The percent edible portion of the carcass varied from 64.3 to 69.9 percent among the different biological types. This is a difference of about five pounds in edible portion per hundred-weight of carcass or more than 30 pounds difference in amount of edible meat per carcass. Data from

over 1,000 animals revealed no important differences in the palatability of the meat among the different biological types where all of them were fed and managed alike to reach slaughter weight and condition at 14-16 months of age.

2. Dairy breeding improvement programs. A study was recently completed at the Animal Improvement Programs Laboratory at Beltsville in cooperation with the National Association of Animal Breeders and the Dairy Records Processing Centers, that makes it possible to calculate summaries on young bulls from six to twelve months earlier than has been possible in the past. This will permit the artificial insemination industry to locate genetically superior dairymen-bred bulls earlier in their lives, and to obtain a reliable progeny test on these bulls much sooner than was possible previously. It permits the studs to return superior progeny-tested bulls to general artificial insemination service at least six months earlier than has been possible in the past and also permits the bull studs to cull genetically inferior bulls much sooner. This will result in major increases in income to the bull studs due to the savings from culling inferior bulls and the added income from the extra semen which will be available from the genetically superior bulls. This will also result in financial benefits to the dairymen using these young bulls since at least six months additional supply of semen will be available from each bull. It is estimated that the total financial benefits to the dairy industry from these USDA-DHIA Preliminary Sire Summaries will be at least 25 million dollars per year measured in terms of additional profitability to the dairymen and to the artificial insemination industry.
3. Prostaglandin (a hormone) can be used to control estrus and ovulation in cattle and sheep. A major problem of milk and beef production is the absence of observed estrus in cattle at the desired time of breeding. The lack of estrus is due both to failure of cattle to exhibit estrus and to failure of people to detect it. Such factors as a high level of milk production and the use of loose housing reduce the inclination of cattle to show estrus, and increasing labor costs reduce the amount of time people spend observing cattle for signs of estrus. Failure to detect estrus delays inseminations for weeks and decreases milk and meat production. Problems of anestrus and estrus detection can be avoided by manipulating ovulation in cattle so that animals can be inseminated at a pre-determined time without the need to detect estrus. Within the last year at Beltsville, Maryland, it has been determined that prostaglandin or some similar compound possessing the ability to regress corpora lutea can be used to regulate ovulation in cattle and sheep to avoid the problems of anestrus and estrus detection and to facilitate the use of artificial insemination in beef cattle and sheep.
4. Finn sheep breed increases lamb production. Experiments at Clay Center, Nebraska; Beltsville, Maryland; and Dubois, Idaho, stations show that cross-bred ewe offspring of Finnsheep produce higher lambing rates than domestic sheep. Increased lamb crops from a low of 15 to 20 percent for 1/4 Finn ewes up to 50 percent or more from 1/2 Finn ewes were noted. Death losses were generally lower in the Finn cross lambs than from domestic breeds. The half Finn ewes are attractive and the half Finn males produce surprisingly good carcasses. Finn cross ewes showed somewhat restricted breeding seasons in California and Florida. In Texas almost all Finn X Rambouillet ewes showed estrus from September to January with 56 to 60 percent in August and February and none from April to June although Finn X Rambouillet crosses were bred successfully in Virginia in April and May. The Finn cross ewes produce well as lambs. In Wisconsin, Finnsheep rams showed greater libido and higher sperm motility than some domestic breed rams when compared every two weeks for a year. Finn cross lambs may weight less but sometimes they excell domestic crossbred lambs at weaning and gain as well from weaning to slaughter. Finn cross rams slaughtered at 22, 26 and 33 weeks of age indicate no loss in boneless retail cut value per lb. of live weight as compared with Rambouillet cross rams. The use of the Finnsheep in crossbreeding programs might increase efficiency of production from 25 to 35 percent.

5. Discovery of repellents for predators. Cooperative work with the University of Wyoming has resulted in the discovery of simple, non-toxic materials which are taste aversive and will prevent coyotes and dogs from taking food. These materials produce a burning sensation in the mouth. Some other materials gave indications of aversive effects of the approximately 100 compounds which have been tested. Investigations are underway of practical ways to apply these materials to sheep so that the attacking predator will be repelled at least after the first kill. A non-lethal method to prevent coyotes from killing sheep and lambs is urgently needed as on the average about half of the producers' net income is being taken by predators. The annual loss from predators exceeds \$50 million annually for the 17 western states.
6. Chances for effective artificial insemination in swine continue to improve. In 1971 successful freezing of boar spermatozoa was first achieved. Since making that breakthrough physiologists at Beltsville, Maryland, have continued to investigate methods of simplifying and improving the semen freezing process. During the past year progress has been achieved in (1) reducing the number of sperm per insemination from 20 billion to 6 billion and (2) reducing the storage volume per insemination from 50 ml to 10 ml. These improvements in technique were made without lowering fertility from that obtained with the previous freezing techniques. These advances bring the use of frozen semen and implementation of artificial insemination one step closer to realization in the swine industry. Using the present freezing technology, the fertilization rate is 30 to 40 percent below that obtained with freshly collected semen.
7. Pathogenesis and transmission of foot-and-mouth disease (FMD). Multiplication of FMD virus was demonstrated in immune, vaccinated, and non-immune cattle at the Plum Island Animal Disease Center. Exposure of cattle or small domestic ruminants either by nasal instillation of FMD virus or by contact with animals infected with FMD virus was followed by growth of FMD virus in the upper respiratory tract. Growth of FMD virus in these immune animals was not necessarily accompanied by clinical signs. This points to an important means by which the virus could maintain itself in a population and be a possible source of latent infection.
8. Deformity in calves produced by poison hemlock extract. Poison hemlock, Conium maculatum, was shown to be able to produce "crooked calf disease" at the Poisonous Plant Research Laboratory, Logan, Utah. One of the principle alkaloids from this plant, coniine, was fed to pregnant cows between the 55th and 75th days of gestation at doses that could have been obtained by grazing, and two of three cows produced badly deformed "crooked calves." The malformations were clinically indistinguishable from lupine-produced "crooked calf disease." In many instances where other pasture is available, ranchers can avoid "crooked calf disease" by keeping animals away from these two plants during the principal susceptible period.

9. A method for classifying field strains of infectious bronchitis virus (IBV). A reliable, systematic method has long been needed for classifying field strains of IBV. The adaptation at the Southeast Poultry Research Laboratory, Athens, Georgia, of 20 different strains of IBV allows their use in just such a method for serological classification. This method, plaque reduction on chicken kidney cells, has further been used at the Southeast Poultry Research Laboratory to identify antigenic differences between some of these 20 strains. The results demonstrate that there are at least 7 antigenic strains of IBV in the United States. This information is imperative in meeting the needs of the poultry industry: (1) To define problem strains in particular areas of the country, (2) to provide a better understanding of the epidemiology of infectious bronchitis and the origin of strain differences, and (3) to formulate a vaccine to meet industry field needs for each particular area.
10. Bovine C type virus suspected to be a bovine leukemia virus. Bovine C type virus, suspected to be a bovine leukemia virus, has previously been identified only in lymphocyte suspension cultures. A practical method for establishing and infecting monolayer cell cultures with this virus has been developed. Investigations at the National Animal Disease Center, Ames, Iowa, with the infected monolayer cultures have provided additional proof of the biological activity and filterability of the C type particle and these cultures will be an important source of material for future studies of the biochemical and antigenic characteristics of the virus. An agar-gel diffusion technique has been adapted for use with antigen prepared from bovine C type virus. This test has been of great value in laboratory studies as a means to identify antibodies in infected animals and C type virus antigen in infected cell cultures. If the bovine C type virus is ultimately identified as the cause of bovine lymphosarcoma the agar-gel diffusion test will have important practical significance as a domestic tool.
11. Production of diagnostic antigen for equine infectious anemia. Equine infectious anemia virus was adapted at the National Animal Disease Center, Ames, Iowa, to grow in cultures of a equine dermal cell line. There was no visible evidence that the cells were infected, but sufficient antigen and virus were produced to make it a practicable procedure for quantity production of diagnostic antigen. Previously, antigen used for the diagnosis of equine infectious anemia was produced from spleens of horses acutely sick with the disease. Not all infected spleens yielded antigen of good quality, and the final marketable product contained viable virus. By using cultured, infected cells, it was possible to produce diagnostic antigen of uniform strength which also gave greater clarity to the test. There was no viable virus in the final product. These are important considerations, especially in a test where the quality of the antigen is the most important factor.

RESEARCH ON PLANT PRODUCTION

Current activities: Research is conducted to improve productivity of food, feed, forage, and fiber crops; ornamentals; trees; and turf. Emphasis is on research to develop improved genetic stocks and varieties, increase yields and quality of crops, improve crop production practices, enhance environmental quality, and improve crop protection technology, including methods to control diseases, nematodes, insects, and weeds.

The need for an ever increasing supply of wholesome nutritious foods and desirable fibers at lower prices is a national problem. Considering the broad array of soil and climatic conditions throughout the United States, and the large number of economic crops, there is a need for a multi-disciplinary research approach to developing new basic concepts to achieve these goals.

The quality of our environment can be improved by the development, appropriate use, and care of attractive shelterbelt screening, ornamental trees, shrubs, turf, ground covers and flowers. There are an estimated 75 million acres of cropland affected by winderosion, the adverse effects of which could be reduced by shelterbelt screening. New knowledge to preserve attractive and eliminate unattractive environmental conditions is needed by rural and urban property owners throughout the nation.

Selected examples of recent progress: A description of these examples follows this index.

Plant Production Efficiency Research

1. Improved sugarbeet hybrid means increased sugar recovery
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Research on Ornamentals, Trees and Turf Including Forest Insects and Diseases

25. Pressure injection of protective chemicals controls diseases of trees
26. Gypsy moth sex attractant promising for stopping spread of the moths
27. Hybrid crape myrtle (*Lagerstroemia*) provides disease resistance

Plant Production Efficiency Research

1. Improved sugarbeet hybrid means increased sugar recovery. A recently released sugarbeet cultivar, US H-21, developed by an ARS scientist at Beltsville, Maryland, produces 8 percent more recoverable white sugar per ton of roots than the current major cultivar grown in the Great Lakes Region. This increase in quality is achieved by a 6 percent improvement in sucrose content and a 0.8 percent improvement in clear-juice purity. The hybrid cultivar

was produced by crossing a monogerm, cytoplasmic male-sterile, seed-bearing parent with a multigerm pollinator. The new cultivar was extensively tested and found to be particularly adapted to sugarbeet production areas in Michigan and Ohio. Other tests have indicated that US H-21 also has high quality in Iowa, North Dakota, and Minnesota. The new cultivar has greater leaf-spot resistance than any of the current commercial cultivars. Leaf-spot resistance has been particularly difficult to develop, so this is a major step in minimizing beet losses from this disease which occurs in about 60 percent of the production areas. The potential increase in sugar production anticipated from extensive use of the new cultivar will have a value of \$4 million annually for the Great Lakes production area alone.

2. The site of oxygen inhibition of soybean photosynthesis identified. Atmospheric oxygen is a potent inhibitor of soybean photosynthesis and thereby productivity; photosynthesis is increased by 45 percent in a low oxygen environment. Recent work at the U.S. Regional Soybean Laboratory, Urbana, Illinois, in collaboration with the Illinois Agricultural Experiment Station, has identified the site of this inhibition to be ribulose diphosphate carboxylase, the enzyme which catalyzes the initial step in photosynthesis by taking carbon dioxide from the atmosphere and fixing it into sugar derivatives. The nature of the oxygen sensitivity is two-fold. Oxygen competitively inhibits the carboxylase with respect to carbon dioxide, and substitutes for carbon dioxide in the carboxylase reaction to yield a sugar derivative which is oxidized back to carbon dioxide by the process of photorespiration. Photorespiration serves no known useful function, so the energy released by this process is completely wasted. The interaction of carbon dioxide, oxygen, and the carboxylase suggest that the oxygen sensitivity of photosynthesis can be reduced, and net photosynthesis thereby increased, by genetic or chemical modification of the carboxylase. These observations have stimulated research in public and industrial laboratories for chemicals which will modify the carboxylase, since an increase in photosynthetic capacity in soybeans and other crops will lead directly to increased agronomic yields.
3. Sugarcane cell cultures regenerated from protoplasts - asexual plant improvement. Successful protoplast formation and subsequent cell regeneration have moved us closer to the day when we can successfully fuse protoplasts from two selected sugarcane clones. This is the first step toward asexual hybridization and the incorporation of new genetic material into sugarcane plants. The research was conducted through a cooperative agreement with the Hawaiian Sugar Planters' Association Experiment Station in Honolulu, Hawaii. Sugarcane cells were grown in suspension cultures for many years and used successfully in biochemical research on nitrogen metabolism and sugar transformation. The redevelopment of cell wall from sugarcane protoplasts and reorganization into cell colonies was not difficult. Plants have not yet been obtained from the regenerated colonies because the cell culture used in these studies was several years old and had lost the ability to redifferentiate. Successful application of these techniques has moved us closer to the day when we can fuse protoplasts from two selected sugarcane clones to develop improved varieties. These principles could be applicable to other crop plants, particularly vegetatively propagated plants, since somatic cell changes once introduced are likely to be retained.
4. Biological herbicide kills rice field weed. A naturally occurring plant disease has successfully killed northern joint vetch, a troublesome leguminous weed in rice. This is the first demonstration of a field test release of fungal spores to control weeds growing in crops. The highly virulent and remarkably specific disease has been isolated in pure culture, produced in bulk in liquid growth media and applied aerially in aqueous spore systems to weedy rice fields in the same way as applying chemical herbicides. In 1972, at Rice Branch Experiment Station, Stuttgart, Arkansas, aerial spores applied to 3-acre field of Nova-66 rice controlled 99 percent of weed plants by 46 days after treatment. Similar aerial releases of spore sprays in 1973 controlled northern joint vetch effectively in three commercial rice fields in Arkansas County. Although weed con-

trol by this fungus is less rapid than by chemical herbicides, the activity is fast enough to give practical field control. The disease affects only northern joint vetch and does not injure rice or crops grown near rice fields, as chemical herbicides frequently do. Highly specific biological herbicides have advantages over chemical herbicides--one of the most important being the lack of harmful residues in the crop or environment.

5. Chemical identification of pest resistance in cotton. Gossypol and ten related chemical terpenoid chemical compounds have been isolated and identified by ARS scientists at College Station, Texas. These compounds are synthesized by the cotton plant in response to infection by disease organisms. They have been given the collective name phytoalexins and appear to contain disease development. It has also been shown that varietal resistance to some diseases was closely correlated with a rapid rate of terpenoid synthesis by the plant and temporary immunity to verticillium wilt occurred following chemical and biological treatments which induced terpenoid synthesis by the plant. The new knowledge gained by this discovery could lead to methods and materials that potentially reduce the losses to diseases by a significant amount.
6. New controlled release formulation improves effectiveness of boll weevil attractant for survey and control. Grandlure, the synthetic form of the boll weevil aggregating and sex pheromone, has been used effectively in large-scale control programs as a supplemental tool for detecting and suppressing populations of this important pest of cotton. The components of the attractant are highly volatile and, until recently, available formulations used in trapping operations were attractive for only 1 to 2 days; frequent replacement was essential to maintain optimum effectiveness. Now, as a result of studies made in the boll weevil belt, an inexpensive formulation, which combines the influence of a physical barrier with that of an impregnating solution that retards volatilization and controls release, has been developed that extends the attractancy in traps for 2 or more weeks. This new controlled release formulation was used in the pilot boll weevil eradication experiment in Mississippi and in large-scale trapping operations in West Texas. Comparative cost estimates indicate that the use of the new formulation resulted in savings considerably in excess of \$50,000 during 1973 in Mississippi and West Texas. This development could save several million dollars in a belt wide boll weevil elimination program.
7. Homogenized leaf curing of cigarette tobacco promises improved product with less labor. High labor requirements and the health issue continue to plague the tobacco crop. Solution of these two problems in the near future is of utmost importance to avert serious consequences for tobacco production. Curing of ripe tobacco in pulverized mass instead of intact leaves is a new approach to tobacco production designed to link mechanized harvesting to the highly automated manufacturing process in the factory. An ARS research team located at Oxford, North Carolina; Lexington, Kentucky; and Beltsville, Maryland, has developed a rapid method for homogenized curing which lends itself to a total mechanical handling. Mature leaf is treated in the field with ethylene releasing agents that cause chlorophyll breakdown and promote yellowing. Leaves are harvested mechanically, crushed into a slurry, incubated, and vacuum dehydrated. By the use of antioxidant chemicals such as sodium metabisulfite and varying harvest times and conditions of slurry incubation, the color, aroma, and chemical composition of the tobacco are maintained at satisfactory levels. The cured product is ready to be reconstituted into sheet form in preparation for cigarette manufacture. Preliminary evidence indicates that homogenized cured tobacco has suitable smoking quality and lower biological activity than comparable tobacco cured by conventional methods. Future work with homogenized curing will be geared toward producing a safer cigarette as determined by smoke tests and bioassay.
8. Use of systems analysis to examine a plant growth-insect damage situation. Because of the availability of the ARS developed cotton growth simulation model SIMCOT II at the Mississippi State University, it was used to examine a problem with fruiting in frego bract, a boll weevil resistant strain of cotton.

Several possible causes for the problem were examined with SIMCOT II. Through this simulation and systems analysis, two hypotheses were eliminated before field testing: (1) increased sensitivity of frego squares to solar radiation burn and, (2) a slower rate of physiological development in frego. A third hypothesis, the abscission of 3 squares over an 11-day period very early in the season was shown to cause a fruiting delay similar to that observed in frego. Field data showed a low level population of tarnished plant bugs was capable of causing the delay in fruiting. Thus, we were able to eliminate two hypotheses before field testing and to field test the most probable one. This illustrated the value of systems analysis and the use of crop growth simulation models in research management and decision making.

9. Proper soil nutrition increases apple quality. Scientists at Beltsville, Maryland, have found that calcium and nitrogen fertilization interact to produce high quality in apples. The role of calcium has previously been implicated in the prevention of several metabolic disorders of fruits and vegetables but there now is definite evidence that calcium levels prevent premature ripening, extend storage life, decrease respiration, and maintain protein synthesis as the fruit matures. High nitrogen levels increase shoot growth of the tree that competes with the fruit for calcium and consequently reduces fruit calcium. Both the level and form of nitrogen supply is important. Use of ammonium sources of nitrogen prevent calcium uptake by the tree thus lowering fruit quality. Since the apple fruit receives calcium only for a short time soon after pollination, the application of ammonium just before the uptake period can deprive the fruit of most of its calcium. Fruit enlargement later in the season dilutes the calcium and causes tissue deficiency. From this work, fertilizer recommendations were developed to make use of these interactions of calcium and nitrogen on tree and fruit growth. This research will help growers produce higher quality apples with better keeping qualities.
10. Postharvest control of pecan weevil now possible. The western irrigated pecan producing areas (Arizona, New Mexico, and West Texas) are currently free of 2 major pecan pests: the pecan weevil and the hickory shuckworm. These insects reduce yields and increase production costs in other pecan producing areas of the U.S. Infested inshell pecans may be transported into previously uninfested areas and can cause serious damage if the insects become established. Experimental hot water dips of inshell pecans by ARS scientists at Byron and Savannah, Georgia, with and without shucks, of 170 F for 3 minutes and 140 F for 5 minutes gave 100 percent control of pecan weevil and shuckworm larvae. Steam treatment (ca. 5 psi pressure) for 3 minutes gave 100 percent control of both insect pests. Hot water treatments also greatly reduced the kernel and shell mycoflora populations, including species that produce mycotoxins on pecans. Cold storage at 0 F for 2 weeks gave 100 percent control of weevil and shuckworm larvae. Shuckworm larvae were killed at one week at 0 F.
11. Chef and ARC--two new machine harvestable processing tomato varieties. Two new machine-harvestable processing tomato varieties, Chef and ARC, were released in 1973 by the Vegetable Laboratory, Beltsville Agricultural Research Center. Both varieties are resistant to three major diseases--fusarium wilt, verticillium wilt, and gray leaf spot. Also, both possess good fresh eating quality, although they were released primarily because of their desirable processing qualities. Extensive testing has demonstrated their adaptability to Eastern and Midwestern tomato growing areas. Because of the early maturity of Chef and the later maturity of ARC, these varieties complement three earlier Beltsville releases by enabling growers and processors to better schedule planting and subsequent harvesting.
12. Toxic tuber glycoalkaloids are not a threat to development of potatoes. Tuber glycoalkaloids (solanine, chaconine) are not closely related to disease and insect resistance in the potato according to results of a three-year intensive research program conducted by ARS. High tuber glycoalkaloids do occur in wild relatives of the potato in association with highly desirable economic genetic characters such as high starch, vitamin and protein contents, superior processing qualities, and resistance to late blight, several viruses, and the gold-

en nematode. Because of the lack of a close genetic association between high tuber glycoalkaloid levels and most, if not all, desirable economic characteristics, these naturally occurring food toxicants do not pose a serious problem to breeding new high quality, widely adapted, multipest-resistant potato germplasm and varieties.

13. Resistance to melon aphids combined with good quality in cantaloup. The melon aphid, Aphis gossypii Glover, causes severe losses by direct injury to cantaloup plants in the Southwest. It also causes indirect injury by transmitting mosaic diseases and viruses. Resistance found in a cooking muskmelon from India with nonsweet, mealy flesh (PI 371795) was transferred into domestic cantaloup with sweet, dessert-quality flesh by selection for both tolerance and antibiosis. Breeding progress through nine successive generations in 3 years yielded backcrossed plants with quality equal to that of the best U.S. cultivars but with the desired resistance to melon aphids.
14. Integrated methods reduce aquatic weed problem. Alligatorweed, an aquatic weed which creates congestion along river banks and canals, can now be controlled. Herbicide application coordinated with insect feeding damage reduces floating alligatorweed mats to a marginal fringe. Various chemical, biological, and mechanical methods have been evaluated on alligatorweed. Chemicals, when used alone, require repeated applications which limit their use. Biological agents (introduced insects) damage plants, but seldom eradicate them. Mechanical control increases the spread of the plant by fragmentation. Integration of herbicides with insect feeding damage appeared more effective than results obtained with either agent alone. Small plot research indicated application of 2,4-D at 2 pounds/acre followed by release of the alligatorweed flea beetle reduced floating mats of alligatorweed. During 1972 approximately 15 miles of river infested with alligatorweed mats was treated using the integrated method (chemicals + insects). This resulted in a 88 percent reduction of the undesirable aquatic vegetation. Integration of two control methods reduced the need of herbicides by 92 percent.
15. Five new plants are sources of promising new anticancer drugs. Anticancer drugs have been found in five new plants that are acceptable for preclinical pharmacological evaluation prior to clinical trials against cancer in human patients. Two of these plants are native to temperate areas of the Orient, are adaptable to cultivation in the United States, and offer potential as new domestic crops. Three are native to tropical Africa and may become new forest products for this and other under-developed areas. These new drugs are end products of the first five years of the long-term anticancer screening program. They bring the total number of new drugs discovered during that period to ten. During the first five years about 9,000 plant materials were evaluated. This program, now in its 14th year, has submitted more than 40,000 plant materials for anticancer screening. The time lag between preliminary screening and final selection of a new drug for clinical evaluation has been about 5 to 8 years. This period has been reduced by program efficiencies which have significantly increased the flow of plant material to chemists involved in fractionation, isolation and chemical characterization research.
16. A new way of increasing crop yield. Scientists in ARS have discovered how to increase the yield of crop plants by treating seeds with newly discovered alpha hormones. These hormones improve seed vigor, accelerate growth, and increase the productiveness of crop plants. Seeds are dipped for one minute in the hormone complex and then planted as usual. In early greenhouse experiments, growth of barley plants that developed from seeds dipped in this manner was accelerated by 15 to 25 percent. Under favorable conditions, the hormones increased the weight of the tillers by 36 percent when measured two weeks following the planting date. Barley seeds that were dipped for one minute in alpha hormones and then planted in a field at Aberdeen, Idaho, produced plants with 16 percent more tillers, and these plants yielded 16 percent more seeds by weight, than did others that developed from untreated seeds. Alpha hormones have improved the quality of seeds. This improvement is evidenced by

accelerated growth, more rapid plant development, and increased crop production. With alpha hormones, improvement of seed quality can apparently be accomplished with a wide variety of crop plants; for example, field beans, soybeans, barley, apple, elm and birch are already known to be responsive.

17. New herbicide controls volunteer corn in soybeans. Volunteer corn is frequently a "weed problem" when soybeans follow corn in a rotation. The problem is greatest when diseases or insects weaken the ear shank or when there is a great deal of lodging. Under these circumstances, mechanical harvesters leave more ears on the ground, and during land preparation, the overwintering ears are broken up and scattered. Both clumps and individual volunteer plants are produced. Until the 1973 growing season, no herbicide was available to control these plants selectively in soybeans. An ARS weed scientist stationed at the University of Minnesota discovered that a new herbicide provides excellent control of volunteer corn and foxtails in soybeans without injury to the beans. Further studies are expected to lead to registration of this herbicide within the next 2 or 3 years. Availability of this herbicide will provide soybean producers with technology to reduce the losses in yield and harvesting losses caused by volunteer corn on extensive acreages in the Midwest.
18. Sheep response to alkaloids in reed canarygrass points to a new key to quality improvement of a high-yielding forage. The lack of palatability of high-alkaloid clones of reed canarygrass (*Phalaris arundinacea* L.) is strongly associated with sheep performance found in grazing experiments by cooperating ARS and University of Minnesota scientists at St. Paul. Sheep grazing unpalatable, high-alkaloid clones lost weight, while those grazing palatable, low-alkaloid clones gained weight. This is the first evidence to explain poor animal performance that is sometimes reported when this agronomically-desirable grass is used for sheep and cattle pastures. This finding will permit plant breeders to improve the feed quality of reed canarygrass by developing low-alkaloid varieties. Low-alkaloid varieties will allow farmers to obtain greater meat gains per animal and per acre without increasing costs. A cooperative project to breed low-alkaloid reed canarygrass has been initiated by the scientists at St. Paul, Minnesota.
19. Release of sorghum with greenbug resistance. Eight groups of both grain and forage sorghums were released to breeders by ARS entomologists and Oklahoma Agricultural Experiment Station plant breeders. Greenbug resistance in this material was obtained by selecting from crosses of 10 susceptible standard lines with resistant lines IS-809 or SA-7536-1. Prior evaluations had determined that antibiosis, nonpreference, and tolerance were all at high dominant levels in young plants and resistance persisted during the growing season to the extent that insecticidal treatment for greenbugs should be unnecessary. Separate tests have indicated that yield and quality is comparable to commercial hybrids presently being grown in the areas for which the material is intended.
20. Geneticists release new varieties and superior germplasm of cereal grains. Genetic improvement of cereal crops is a continuing effort needed to increase yield potentials of the various crops, stabilize production, reduce losses to disease and insects, and improve quality. ARS plant geneticists and breeders, generally in cooperation with one or more State Agricultural Experiment Stations, intermittently release new varieties and superior germplasm stocks.

During the last year, ARS announced releases of the following specifically improved germplasm stocks of cereal crops for further development in experimental and commercial breeding programs:

Corn --

New germplasm stock containing the rhm gene for resistance to leaf blight (*Helminthosporium maydis*)

Four new inbred lines of high-lysine germplasm

'B76', inbred variety for the central corn belt

Nine synthetic varieties with differing combinations of desirable characteristics

Sorghum --

Eight composite lines of green-bug resistant germplasm

A new hybrid sorghum (KS692) and restorer germplasm of the male parent (KS55)

Pearl millet --

Tift 23B tr, a new line of germplasm that provides single gene suppression of undesirable woolly hairs and barbs on leaves

Rice --

'Bonnet 73', a long-grain high-yield variety for southern areas

Barley --

'Deawn', a spring feed variety for the Intermountain area

'Klages', a 2-row spring malting variety for irrigation

Oats --

'Noble', resists smut and yellow dwarf virus

'Stout', short stiff straw

'Pennwin winter', for northeast Multiline M73 and E73, newest lines for rust control

'Otee', superior yellow dwarf virus resistance

Wheat --

'Norana', a semidwarf spring variety for Montana

New dwarfing germplasm in spring wheat from mutation breeding

'Oasis', soft red winter with leaf blotch resistance

'Vel', soft red winter germplasm with cereal leaf beetle resistance

'Ward', a short-straw and high-quality durum

Benefits from these genetic improvements of cereal grains are expected to apply to more than 100 million acres of the planted crops.

21. Orchard brining of sweet cherries. Methods and equipment for maintaining a high quality of mechanically harvested sweet cherries for maraschino market have been developed by ARS researchers in East Lansing, Michigan. ARS research showed that mechanically harvested sweet cherries should be brined in the orchard immediately after harvest if top quality cherries were to be obtained. Conventional SO₂ brine is hard to handle in the orchard and a new brine using powder which the grower could mix with water was tried during the 1972 season. Also methods of selling cherries by volume in the brine solution instead of the conventional weight method were developed by ARS. In 1973 the industry handled 30 percent of the Michigan crop by this new method and plans to orchard-brine over 60 percent of the '74 crop. Quality was greatly improved over previous years and growers obtained a higher price for their product.
22. Conversion of gin bale presses to make a modified flat bale. At the request of the Packaging Committee of the National Cotton Council, experiments were conducted at the Stoneville Ginning Laboratory, Stoneville, Mississippi, which demonstrated that it was feasible to reduce gin press box dimensions from 54 x 27 inches to 54 x 24 inches to give a bale configuration which would require only one compression at the compress to be eligible for either domestic or export shipment. Furthermore, the bale is more acceptable to foreign mills because it is more satisfactory for use with automated opening room equipment. It is estimated that 60 percent of the gin presses in the U.S. will be converted for the 1973-74 ginning season. It is estimated by the cotton industry that this modification will result in a saving of some \$2.50 per bale of approximately six million bales of export cotton next year.

23. Reduction of soil metal friction by lubrication with polymers. Reclamation of spoilbanks by bulldozers is not economical because soil sticks to the blades. The National Tillage Machinery Laboratory at Auburn, Alabama, is studying the effectiveness of injecting slippery polymers through the blade to reduce soil-metal friction. Laboratory models show reductions in friction of 40-50 percent, and applications should reduce the cost of leveling spoilbanks from 6 cents per cu. yd. to 1.4 cents per cu. yd.
24. Wide-bed cultural system for cotton on sandy soils. A cultural system with differential treatment of the tillage and traffic zones as developed by ARS engineers at Stoneville, Mississippi, promises a reduction of nearly twenty percent in production costs for cotton. The system takes maximum advantage of "skip-row" effects and requires only 10,460 feet of row per acre, as compared to 13,068 feet for conventional systems. A conservative estimate of savings in labor, tractor and chemical energy at this stage of development is 15 percent. Additional reductions in net cost are possible through minimum tillage, controlled traffic and/or trench-tillage. Complete development of the wide-bed system is important because it offers substantial savings in dollars and energy and will allow a farmer in many instances to farm 25 percent more acreage with the same equipment.

Research on Ornamentals, Trees and Turf
Including Forest Insects and Diseases

25. Pressure injection of protective chemicals controls diseases of trees. A pressure system of injecting protective chemicals into elm trees to protect them from Dutch elm disease promises not only to protect healthy trees but for the first time offers a treatment that could arrest the disease symptoms on infected trees. A large tree can be injected with a systemic fungicide such as benomyl in 25 to 30 minutes using pressures generated by conventional power sprayers at 250 pounds per square inch. The pressure injection system, using benomyl, while to date is used primarily to control and cure Dutch elm disease, has the potential for use with other tree species and a variety of chemical treatments including pesticides, fertilizers, and growth regulators.
26. Gypsy moth sex attractant promising for stopping spread of the moths. Survey for gypsy moth infestations shows extensive spread of the moth from the Northeast in 1973. A practical means advanced to stop this spread is the use of disparlure, the synthetic form of the gypsy moth sex attractant. Tests during 1972 and 1973 in Massachusetts and Pennsylvania continue to reinforce the promise of earlier trials that indicated disparlure can markedly reduce the number of males finding females for mating. In the largest test, disparlure at 2 grams/acre in a microcapsular formulation was dispensed over a naturally infested 23-square-mile area. Data from the various tests show that response of males to females and to disparlure in traps was adequately suppressed from 2 1/2 to 8 weeks. Since efficiency of the air permeation technique improves as the moth population diminishes, the attractant has the potential of eliminating light infestations of the moth, especially those in outlying areas.
27. Hybrid crape myrtle (*Lagerstroemia*) provides disease resistance. The National Arboretum through its plant introduction and breeding programs has made rapid strides in resolving the problem of mildew in crape myrtle. Using a little-known species *Lagerstroemia fauriei*, as a source of mildew resistance, National Arboretum geneticists have successfully produced mildew-resistant hybrids vastly superior to the common crape myrtle. Not only are the new hybrids resistant to this serious disease, but the plants have improved habit, flower type, and bark characteristics. They will offer the nurserymen and the public a new array of varieties and greatly increase the use of this plant as a summer flowering tree and shrub.

RESEARCH ON THE USE AND IMPROVEMENT OF SOIL, WATER, AND AIR

Current activities: Research is conducted to improve the management of natural resources, including investigations to improve soil and water management, irrigation and conservation practices, and to determine the relation of soil types and water to plant, animal, and human nutrition. The research includes studies on hydrologic problems of agricultural watersheds and the application of remote sensing techniques in meeting agricultural problems. Research is also conducted on agricultural pollution problems such as protection of plants, animals, and natural resources from harmful effects of soil, water, and air pollutants, and ways to minimize and utilize industry processing wastes of agricultural commodities.

There is a need for land and water resource improvement to maintain and improve the quality of the environment and the natural resource base and to enhance the development of rural communities.

Selected examples of recent progress: A description of these examples follows this index.

Research on Soil and Water Conservation and Development

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| 1. Well point drain systems are economical and effective | 3. Plant stress is linked to incidence of fusarium root rot disease in the Columbia River Basin |
| 2. Plowed out grassland increased runoff and erosion | 4. Water-nutrient management for sandy soil in humid regions |

Research on Watershed Development

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| 5. Salinity of impounded water is affected by structure design | 7. New mathematical model successfully predicts snow accumulation, melt and water over New England |
| 6. Hydrologic model evaluates environmental impacts | |

Research on Pollution

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| 8. Heavy metals may limit use of sewage sludge on cropland | 9. New tomato cleaning/peeling system reduces waste |
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Research on Soil and Water Conservation and Development

1. Well point drain systems are economical and effective. In the Lower Rio Grande Valley of Texas, drainage systems of pumped wells using plastic well points will lower saline water tables. Following drainage, injurious salts in surface soil may be leached from the soil and crops grown. Finer textured soils that cannot be drained by conventional tile drainage systems may also be drained with pumped well systems and thereby used for crop production. For example, a well line consisting of eleven well points in a 20-foot thick sand stratum beginning at 14 to 33 feet below the soil surface of Harlingen clay has lowered the ground water surface from 2 feet initially to 11 feet currently at the well line. At 900 feet from the well line, the water table is at 4.5 feet. A system installed in a 50-acre field of Raymondville clay loam soil discharged an average of 0.31 acre-feet of water per acre in 1972 at a cost of \$1.66 per acre. Well screen scaling has not been a problem on these all-plastic systems. Once the water tables are lowered, leaching of salts from the root zone can proceed both from rainfall and applied irrigations. On sampling dates a year apart, the average electrical conductivity, a measure of soil saltiness, of the 0 to 6-foot Raymondville loam profile was reduced from 6.1 to 3.7 millimhos/centimeter. Well points systems can be installed for \$40 to \$80 less per acre than pipe drain systems. The interest alone on the lower capital investment more than offsets the pumping costs of the well point systems. Pumped-well drainage systems using plastic well point may be used throughout the semi-humid United States and elsewhere where high saline water tables reduce crop production.

2. Plowed out grassland increased runoff and erosion. Grassland converted to a wheat-fallow rotation on sloping lands increased runoff and erosion at Akron, Colorado. The study was conducted in an area where the annual precipitation averaged 15 inches. The crop-fallow system is essential if crops are to be grown. With the current high price of wheat, there is incentive to shift from range to crops but these studies offer considerable caution to such shifts when slopes exceed 2 to 3 percent. Alternative conservation practices, such as terraces, to protect the land may be too expensive. We succumbed to a similar economic incentive and converted frail lands to croplands in the late 1920's and experienced devastating dust storms in the 1930's. Akron was in the center of these.
3. Plant stress is linked to incidence of fusarium root rot disease in the Columbia River Basin. Pullman, Washington, studies showed that cultural practices of winter wheat that hastened early depletion of soil water in the spring, such as high nitrogen fertility and high plant density, caused the greatest plant water stress in June and resulted in the greatest incidence and severity of root rot. Where root rot is severe, losses may range from 10 to 20 percent. In Prosser, Washington, cultural practices that eliminated compact subsurface layers and permitted maintenance of adequate soil moisture largely counteracted the detrimental effects of Fusarium root rot in beans. Seed bean yields were 30 to 50 percent higher in areas so treated than in the check plots.
4. Water-nutrient management for sandy soil in humid regions. At Florence, South Carolina, sweet corn irrigated with a porous tube system produced 10 percent more marketable ears than when conventional furrow or sprinkler systems were used. Furthermore, only about one-half as much water was required. Irrigations were automatically controlled by soil moisture sensors which initiated and terminated water application at predetermined levels in the root zone. Irrigation with the porous tube system allows the placement of water under the corn rows. Nitrogen was applied with the water in the porous tube systems as needed by the corn rather than as a preplant application. Only about one-half as much nitrogen was required.

Research on Watershed Development

5. Salinity of impounded water is affected by structure design. A properly designed floodwater retarding structure was compared with an oversized structure in western Oklahoma during an abnormally dry 2-year period. The volume and salinity of stored water remained comparatively stable in the properly designed structure. But the salt concentration increased approximately 22 times and the amount of stored water decreased to 1/33 of the initial volume in the oversized structure. Thus, by oversizing a floodwater structure to accommodate high rates of sedimentation, optimum hydrologic design size may often be surpassed with consequent improvement of other desired features. For instance, overdesign reduces dilution and flushing of impounded waters by runoff of generally high quality water. Without this desirable dilution and flushing, the salt concentration of stored water increases by the accumulation of salts from the watershed. These salts result from the geologic weathering and hydrologic processes that occur naturally on the watershed.
6. Hydrologic model evaluates environmental impacts. The mathematical model of watershed hydrology developed by USDA Hydrograph Laboratory, Beltsville, Maryland, is being used by the Soil Conservation Service watershed planning party in Maryland in preparation of environmental impact statements. Potential effects of the improved drainage system in the Dividing Creek Watershed on the Pocomoke River Estuary (eastern Maryland) were evaluated. Model simulations showed that the total runoff volumes would not change but that more subsurface would occur rather than surface runoff. Storm hydrographs with the watershed plan were shown to have higher peaks and steeper recessions. However, the routing to the estuary produced essentially the same storm hydrograph as produced by the pre-treatment conditions. The

Maryland watershed planning party is now formulating another application of the Hydrologic Model to the development of the Work Plan and Environmental Statement for the Middletown Branch Drainage Project on Maryland's Eastern Shore. The model provides a context for insertion and evaluating in a real life series the findings of highly technical information on soil, agronomy, and hydraulics of flow as they affect the hydrologic response of the encompassing watershed.

7. New mathematical model successfully predicts snow accumulation, melt, and water input over New England. A model for predicting snowmelt in the Northeast using readily available climatic input has been developed by the New England Watershed Research Center, Burlington, Vermont. Snowmelt is an elusive hydrologic phenomenon--difficult to estimate because of environmental-climatic interactions. The current model estimates buildup of the snowpack, subsequent melt, and resultant water input to small watersheds or large basins using only standard weather station temperature and precipitation data. The tested model reduces the error of standard climatological models by 50 percent. This model has value not only for snow hydrology researchers, but enables forecasters, flood control agencies, water resource planners and developers, recreation, forestry, and agricultural interests to incorporate more accurate climatic and synoptic information on snow and water-input into their planning and operational systems. An example is the estimation of spring snowmelt water input to the Connecticut River, where interbasin transfers to the Boston municipal supply system are being planned.

Research on Pollution

8. Heavy metals may limit use of sewage sludge on cropland. Sewage sludge studies at Beltsville, Maryland, and St. Paul, Minnesota, indicate that heavy metals could become a problem through continued application over a period of years. Research shows that uptake of heavy metals (zinc, copper, nickel, cadmium, lead, mercury) and accumulation in plants are affected by soil pH, organic matter, and phosphate availability, and varies greatly among crop species and portion of the plant affected. Studies at St. Paul, Minnesota, showed that metal accumulations in the edible portion of several vegetable crops varied considerably, but seldom exceeded a 2- to 3-fold increase at the highest application rate (200 tons per acre). The observed levels of metal accumulations, however, were within the tolerance limits for these crops. At Beltsville, Maryland, it was found that corn excludes more cadmium and lead from the grain than does soybeans, and beet roots contain much less cadmium and lead than do carrot roots. This type of information will serve as valuable input data in selecting crops that will be safest and most effective for use on cropland that is used for sewage sludge disposal.
9. New tomato cleaning/peeling system reduces waste. An integrated cleaning/peeling procedure developed by ARS engineers has been demonstrated at a large tomato cannery. The system, using techniques and equipment developed by the Western Regional Research Center, Albany, California, personnel, was evaluated cooperatively with the National Cannery Association and a tomato canner. It was shown to reduce water use and biological oxygen demand by 90 percent compared to a conventional system for washing and peeling tomatoes for canning. The new system employs a specially designed set of rubber disc peeler units and lye peeling equipment. Forty-five tons of typical cannery tomatoes were processed with excellent results, not only in reduction of waste but also in effectiveness of the cleaning of the tomatoes. Special demonstrations of the process were viewed by 41 representatives of food canners and 14 representatives from the equipment manufacturing industry. Although the system was demonstrated with whole canned tomatoes, the rubber disc cleaning operation is also applicable to tomatoes intended for paste and catsup products.

RESEARCH ON MARKETING, USE, AND EFFECTS OF AGRICULTURAL PRODUCTS

Current activities: Research is conducted to develop new and improved foods, feeds, fabrics and industrial products and processes for agricultural commodities for domestic and foreign markets. Research is conducted on marketing of agricultural products. Studies concern the processing, transportation, storage, wholesaling and retailing of products, to reduce the costs of marketing, to maintain product quality, and to reduce losses from waste and spoilage.

Research is conducted on human nutritional requirements, composition and nutritive value of food needed for consumers and for Federal, State and local agencies administering food and nutrition programs.

Research is conducted on problems of human health and safety. Studies concern developing means to insure food and feed supplies and products free from toxic or potentially dangerous residues from agricultural sources and processing operations, harmful chemicals, microorganisms and from naturally occurring toxins. The research conducted also includes studies concerning means to control insect pests of man and his belongings; prevent transmission of animal diseases and parasites to man; reduce the hazards to human life resulting from pesticide residues, toxic molds, tobacco, and other causes; and, develop technology for the detection and destruction of illicit growth of narcotic-producing plants.

Research is conducted on consumer services to measure family use of resources, to identify economic problems of families, and to provide information on fabric performance and the use and care of clothing and household articles by consumers.

Research on housing is conducted to provide knowledge and technology to help bring about improved designs, material, and construction methods for both low-cost renovation and new construction of rural housing suitable for low-to-moderate income rural residents.

Selected examples of recent progress: A description of these examples follows this index.

Market Efficiency Research

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12. Food supplements from cheese whey-soy flour mixture

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Research on Consumer Services

19. Money-saving aids for family
buying

Market Efficiency Research

1. New methods of extending storage life of fruits and vegetables. Peaches and nectarines are highly perishable fruits with a short life of only 2-3 weeks under optimum conditions at 32 F. Fruit stored longer often develops internal breakdown and fails to ripen satisfactorily when moved to higher temperatures for marketing. Recent research at Beltsville, Maryland, showed that storage in a controlled atmosphere of 1 percent oxygen and 5 percent carbon dioxide at 32 F markedly delayed the occurrence of breakdown. By combining controlled-atmosphere storage with an intermittent warming treatment (2 days at 65 F), the physiological breakdown was further delayed. This improved storage procedure extended storage of some varieties about 6 weeks or allowed a total storage life of up to 9 weeks. Controlled atmosphere storage used with intermittent warming should extend the marketing season and reduce the high waste often experienced in marketing peaches and nectarines.
2. Starch-encased powdered rubber. Scientists at the Northern Regional Research Center, Peoria, Illinois, have developed a process for making powders that contain up to 97 percent rubber. The powders are made by coprecipitating rubber particles with about 3 percent of a starch derivative. The rubber industry has considered the development of powdered rubber of highest priority and the starch-encased powdered rubber meets the requirements of the industry that powdered rubber contain no more than 5 percent of a partitioning agent and be a direct substitute for slab rubber. Use of powdered rubber in place of slab rubber reduces mixing time in conventional equipment by 80 percent. Even greater savings in time and energy can be realized with new equipment designed for powdered rubber processing. For example, injection molding machines have been modified to permit direct handling of powders to eliminate the need for prior high-energy mixing.
3. Low cost instrument developed for rapid measurement of fat content of ground meat. A Ground Meat Analyzer has been developed at Beltsville, Maryland. This device gives an instant reading of the fat content of a package of ground beef. Commercial models of this unit are being developed by two firms with one firm now field testing their unit. It is anticipated that these units will become standard instruments for use in the grocery store to indicate the fat content of ground meat, thereby eliminating the "eyeball" test now commonly used by butchers.
4. Reducing turkey processing cost. Under an ARS research contract with a U.S. poultry processing equipment manufacturer and in cooperation with the University of California's Department of Food Science, and Technology, improved equipment for boning turkeys was designed, constructed, and tested under commercial turkey processing plant operating conditions. After experimental testing, minor modification, followed by three seasons of testing for endurance and adaptability to workers' needs (reducing fatigue), worker productivity was increased by 67 percent over conventional methods. The key factor in bringing about the improvement was the rigid turkey shackle (covered by public patent). As a major component of the new line, it reduces worker fatigue and injury hazard by avoiding the need for awkward tiring motions while the basic boning cuts are performed. It is possible to preposition each bird for the cut to be made and hold it firmly in position while the cut is being made (instead of using one hand as a holding device) thereby increasing cutting accuracy and production speed while maintaining a high yield of prime cuts. In the initial tests, boned yield was actually increased two percent over conventional boning methods.

5. New catalyst for soybean oil -- worldwide in impact. A copper-containing catalyst to stabilize the flavor of soybean oil, developed by researchers at the Northern Regional Research Center, is now expanding in domestic and foreign commercial use. This catalyst selectively attacks linolenic acid, the objectionable flavor and odor-producing precursor in soybean oil, and converts it to a more flavor-stable component. The preexisting and desired polyunsaturated fatty acids are essentially untouched by this new copper oxide-type catalyst. The USDA catalyst permits the import and conversion of American soybean oil to a cooking oil that meets the French legal standard with less than 2 percent linolenic acid. Pilot plants using this new catalyst in Central Europe, Scandinavia, as well as in the United States, are now in operation, and new and larger plants are on the drawing boards or under construction. For the U.S. farmer with his 25 percent increase in soybean production, this catalyst means a more stable, more economic domestic cooking oil and a new dollar export market for surplus oil. For the soybean processor, this catalyst fits into his current process equipment and yields a low linolenic acid oil requiring minimal winterization. For the soybean industry which considers oil a necessary but valuable byproduct of soybean meal production, this catalyst means an economic supply of essential protein required for our animal feeding economy.
6. Frozen quick-cooking dry bean products win Gold Medals. A simple and economical process has been developed by scientists at the Western Regional Research Center, Albany, California, for the preparation of a more convenient and acceptable form of dry beans. The new, frozen, quick-cooking beans cook within 15 minutes and do not require presoaking. They have an enhanced natural bean flavor and a smooth, uniform texture. Frozen, processed beans have been prepared from baby lima, large lima, blackeye, kidney, pinto, pink, garbanzo, and California small white dry beans. In a test at the 1973 California State Fair, the cooked, processed large lima beans were evaluated by a random panel of more than 1200 adults. Based on a favorable response by more than 97 percent of the panel, the product was awarded a Gold Medal. The same honor was awarded to a precooked, frozen mixed bean salad, prepared from six varieties of quick-cooking dry beans. Both awards were shared by the Department and the California Dry Bean Advisory Board, which sponsored the two products. Two commercial applications of the process have been initiated. A large, national supermarket chain is preparing to test market several of the frozen, quick-cooking beans as well as the frozen mixed bean salad.
7. Cottonseed flour plant dedicated. Plains Cooperative Oil Mill dedicated the world's first commercial cottonseed flour mill of its kind at Lubbock, Texas, August 14-15, 1973, in ceremonies attended by nearly 1500 people. Using the Southern Regional Research Center's (New Orleans, Louisiana) Liquid Cyclone Process (LCP), the \$2.4 million plant, which is expandable, will have the capacity to produce 50,000 pounds a day of cottonseed flour containing 65 percent protein. GRAIN Processing Corporation of Muscatine, Iowa, will merchandise the LCP protein under the trade name of PRO FAM C 650 for use as a food fortifier in candy, baked goods, breakfast foods, snack foods, and processed meats. Grain Processing Corporation plans also to produce cottonseed protein isolates containing 90 to 100 percent protein from the flour.
8. Absorbent starch graft polymer. As part of a program on industrial utilization of cereal starches through graft polymerization, new polymers having remarkable water absorbency have been prepared by scientists at the Northern Regional Research Center. These polymers are hydrolyzed starch-polyacrylonitrile (H-SPAN) graft copolymers which contain about 50 percent starch. Dried H-SPAN films rapidly absorb several hundred times their weight of distilled water, or about 100 times their weight of 1 percent saline solution, while remaining as insoluble gels. Absorbent disposable soft goods such as diapers, catamenials, hospital bed pads, surgical sponges, and bandages are expected to total 1.6 billion in sales by 1976. The expansion of this industry requires products with improved absorbency and less bulk. Environmentalists are demanding that the quantity of soft goods discharged into waste water be reduced because of the burden placed on sewage treatment plants.

9. New washable wool treatment demonstrated commercially. The Department's Wurset process as developed at Albany, California, for producing machine washable woolens was successfully tested on 200,000 yards of woolen fabric in a full scale commercial trial. A large woolen mill (Carleton Woolen Mills, Winthrop, Maine) cooperated with Department scientists and engineers in this trial which was financially assisted by the Department's Agri-business program. Mill officials report that the new process represents a major improvement over other currently used treatments for imparting machine washability to woolens. The treated fabrics have excellent feel and appearance, as well as durability and dimensional stability. Unlike some other treatments, no dyeing problems were encountered, and no significant pollution was produced. Potential savings in chemical treating costs were estimated by the mill as at least five cents per yard compared to the process they have been using. The treated fabrics, blends as well as 100 percent wools, meet the strict specifications for receiving the Wool Mark and Wool Blend Mark labels.
10. Prototype refrigerated van container shows potential for reducing losses in shipping perishable foods. The experimental refrigerated van container developed by ARS in cooperation with a trailer builder and the refrigeration industry has given excellent results in preliminary field trials. Stationary cooling tests and cross-country shipping experiments have shown that the pressurized lateral distribution system for circulating cooled air in the container gives more rapid and uniform refrigeration of perishable cargoes. Since rapid removal of field heat and uniform cooling of various products to optimum holding temperatures are essential to prolonging shelf life, maintaining quality, and reducing spoilage losses, the new container has an excellent potential for cutting decay losses and quality deterioration in shipments of various perishable products to overseas markets. Use of new load-securing equipment and load-stabilizing techniques gives the container the capability of reducing physical damage to packages and products. Also, because the container is designed to effectively cool tightly-stacked loads, it can haul loads of greater density which can result in reduced per-package transportation and refrigeration costs. This same capability also uniquely fits the container for transporting unitized loads of packages. The container also incorporates features which permit the use of cryogenics for rapid precooling or product fumigation when required.
11. New food distribution market plans. Plans were completed for the construction of some \$50 million worth of food distribution facilities in New Orleans, Louisiana; Dallas, Texas; Wichita, Kansas; and Wilkes-Barre/Scranton, Pennsylvania. The recommended plan in New Orleans calls for the acquisition of about 90 acres of land, initially, for the construction of facilities for 54 wholesale food firms found to be in immediate need of improved facilities. Firms handling fruit and vegetable, meat, poultry, egg, dairy, grocery, and fish and shellfish products are included. The proposed center would cost about \$13.4 million to construct and would form the nucleus around which a more complete center would grow that would provide additional facilities needed in the future. With public financing, the initial center would save as much as \$1.3 million each year in the cost of handling food in New Orleans. A plan has also been completed for new wholesale fruit and vegetable distribution facilities for Dallas, Texas. Long-range urban improvement programs in the city and the existence of outdated and inadequate facilities will force many independent fruit and vegetable wholesale firms to relocate or go out of business. A centralized distribution center of about 60 acres is proposed to meet their needs. Studies of the facilities and methods for distributing food in Wichita, Kansas and the Wilkes-Barre and Scranton, Pennsylvania, areas were completed.

Research to Expand Agricultural Exports

12. Food supplements from cheese whey-soy flour mixture. ARS scientists from Washington, D. C., and Wyndmoor, Pennsylvania, cooperating with the Agency for International Development (AID), other Department Agencies (ERS), and industry, have developed a low-cost nutritious beverage powder for overseas shipment under the "Food for Peace" program. The beverage product is

designed to combat the serious and widespread problem of malnutrition of preschool children in the low-income populations of tropical and subtropical countries. The formulation contains 41 percent sweet whey, 36 percent full fat soy flour, 12 percent soybean oil, 9 percent corn syrup solids, and 1 percent added vitamins and minerals. It will be reconstituted to 15 percent total solids for consumption. The product, readily dispersible in water, is undergoing evaluation by AID. Containing high protein and fat contents, it shows definite promise as a food supplement in diets deficient in high protein foods for child feeding.

Food and Nutrition Research

13. New source for iron enrichment of cereals. Scientists at the Western Regional Research Center, Albany, California, have shown that ferripolyphosphate is a superior material for use in increasing the iron content of cereal products. By government order, the level of iron fortification in cereal products has just been doubled for the purpose of reducing the incidence of iron deficiency anemia in the United States. Traditional sources of iron presented problems with respect to the degree of availability to the body, and also in adversely affecting the quality and stability of cereal products. Research was conducted to survey new sources of iron, determine the effects of these materials, at double the former enrichment levels, on product quality, and to determine the chemical fate of these iron enrichment compounds in flour when baked to bread. Preliminary safety tests have also been favorable. One of the country's leading flour millers has verified that ferripolyphosphate does not promote rancidity or adversely affect cereal product color when used at levels required by the new enrichment standards.
14. The role of zinc in brain growth and behavior. Recent ARS research at Grand Forks, North Dakota, gives evidence that a diet adequate in the trace mineral zinc is essential for normal development of the brain. Both behavior and brain growth may be affected by inadequate zinc nutrition during pregnancy and lactation. The fetus and young infant are particularly at risk. Because available evidence suggests that some women may not consume adequate amounts of zinc during pregnancy, the effects of zinc deficiency in the pregnant and lactating rat have been studied. Several learning and other behavioral characteristics were retarded in animals who experienced zinc deprivation during fetal development. Some but not all of these were also impaired in the young exposed to zinc deficiency during just the lactation period. From these studies, it appears that an adequate zinc nutriture is essential for normal biochemical and behavioral development of the brain.

Research to Improve Human Health and Safety

15. Guarding meat safety. Though nitrite-containing curing salts have been used in cured meats for decades with apparent safety, recent evidence suggests that they may possibly pose a food hazard. Nitrite is responsible for the characteristic color and flavor of cured meats. It also acts as an important preservative that inhibits deadly food toxin-producing botulism organisms, and as a fat antioxidant. In-depth studies have been made of cured meats such as frankfurters, ham, and bacon, as well as of the curing process itself. Complex analyses have detected very minute amounts (parts per billion) of potentially harmful nitrosamines (chemicals formed in the cured meats) in a small proportion of some cured meat products examined. Also, possible precursors of nitrosamines in meat have been investigated and the reaction itself has been studied relative to processing procedures for cured meats. As a result of these investigations, Department scientists at Eastern Regional Research Center, Wyndmoor, Pennsylvania, have discovered that addition of vitamin C or a closely related substance in the cure process can inhibit or drastically reduce formation of the toxic nitrosamines. This development is under commercial evaluation, and may permit continued use and enjoyment of the meat products cured with nitrite, taking advantage of its beneficial contributions while suppressing unfavorable deleterious reactions to form nitrosamines.

16. Practical process for inactivating aflatoxins in contaminated cottonseed meal now commercialized. Scientists around the world first became aware of the aflatoxin problem little more than a decade ago, when a toxin produced by a mold *Aspergillus flavus* was identified as the cause of thousands of deaths among poultry in England. As one part of a broad program on aflatoxins, scientists at the Southern Regional Research Center, New Orleans, Louisiana, have devised a method of chemically inactivating aflatoxins in contaminated cottonseed meal by treatment with ammonia. Conditions of time, temperature, moisture, and pressure were determined for pilot-plant procedures and then, in cooperation with industry, for larger scale operation. On the basis of these successful tests, FDA gave interim approval for cottonseed meal detoxified with ammonia to be fed to cattle and gave limited interim approval for it to be fed to laying hens.
17. Cotton batting and flange materials developed for flame- and smoulder-resistant mattresses. Fires in hotels and in homes are often started by a lighted cigarette falling on a mattress--a fact recognized by the Department of Commerce in setting its standard for Flammability of Mattresses. This standard required the development of a product that could resist smoldering combustion, which often exceeds temperatures of 1000 F. Scientists working at the Southern Regional Research Center have treated rawstock with boric acid to produce a cotton batting material that cannot be ignited by a cigarette and adds a cost of only about \$2.00 per mattress at the manufacturer's level. This development offered manufacturers an inexpensive, practical way to comply with the standard by the deadline date of December 7, 1973.

A related invention of ARS scientists provides a way to protect untreated batting from combustion: Back-coated or aluminum-laminated fabrics used as heat shields in composite mattresses topped with polyurethane. These flange materials, which are used under the tape edge of mattresses, act as barriers that prevent thermal energy from a cigarette or other source of ignition from reaching the filling material. In recognition of their usefulness, they were quickly adopted by industry and are now offered by at least five companies.

18. The Diehlstadt story--case study in crisis intervention. In 1972, the Commodity Credit Corporation (CCC) had about 600,000 bushels of white corn from the 1971 crop under loan in southeastern Missouri. Aflatoxin-tainted corn had been located in the area by the Food and Drug Administration (FDA). When CCC decided to accept delivery of the 1972 white corn they turned to ARS scientists at the Northern Regional Research Center to plan a program of rapid testing for aflatoxin to segregate contaminated corn from toxin-free corn. Within a month, technicians were trained at NRRC, and the program was set up at the elevator site so tests could be done on truckloads of corn as farmers waited. With the cooperation of farmers, CCC, Agricultural Marketing Service, and FDA, NRRC scientists conducted research on the effectiveness of rapid testing; reliability of visual tests ("fluorescent") in locating contamination; and molds occurring in corn from the area. Rapid tests were effective in segregating contaminated corn so aflatoxin-free corn could be sold at a profit. Research indicated that although there was an aflatoxin problem in southeastern Missouri in 1971, the toxin was not detected in any corn from one-fourth of the farms. Two-thirds of the farms did not have appreciable levels of aflatoxin in their corn, and only one in 10 farms had a problem.

Research on Consumer Services

19. Money saving aids for family food buying. Food economists at Hyattsville, Maryland, responded to consumer concern over high food prices by preparing cost comparison guides and other materials that would help homemakers make wise use of food money. "Money Saving Meals" and "Cost of Meat and Meat Alternates," have been widely distributed by USDA. Over a quarter of a million copies of each have been issued for the first six months since April 1973. USDA's family food plans at different levels of cost now are being priced monthly, and the average weekly cost of food at home under the plan is published in USDA's Food and Home Notes, a publication directed to food editors and feature writers in the mass media.

COORDINATION OF DEPARTMENTAL AND INTERDEPARTMENTAL
ACTIVITIES RELATED TO PESTS AND THEIR CONTROL

The Agricultural Research Service administers the interdepartmental activities related to pests and their control. The activities in that endeavor are listed below:

CURRENT ACTIVITIES: The Department's activities in pest control have the objective of providing the technology needed to control all classes of pests. Of principal importance in that regard is the protection of crops and other commodities against pests that reduce yield or otherwise influence agriculture, health, and environmental amenities. Although agricultural production is of primary concern, other needs for pest control cannot be ignored. Of particular importance are the pest control activities related to quarantine efforts, by which new exotic pests are intercepted and destroyed at ports of entry. Also important are the monitoring activities for pesticide residues in red meat and poultry, which assure a wholesome supply of meat and meat products.

Activities of the Department are closely coordinated with States and with other agricultural groups as needed. This cooperation and coordination occurs at all levels - administrators, scientists, extension personnel, and regulatory units. There is also an increasing need for international coordination, particularly in activities related to the establishment of international tolerances for pesticides.

The need for interdepartmental coordination has become more important because various responsibilities relating to pests and their control are housed in a number of departments of the Federal government. In addition to USDA, the EPA, DHEW, DOL, DOT, and DOI all have legislative responsibilities relating to pests and pesticides. Coordination is achieved through the USDA Pesticide Committee and the Federal Working Group on Pest Management.

SELECTED EXAMPLES OF RECENT ACTIVITIES AND PROGRESS:

1. Scientists of the Department continued in the varied activities of the Federal Working Group on Pest Management and its five panels on research, monitoring, information, program review and safety.
2. We now have pest management programs in 29 states. Crops now included under pest management programs are cotton, apples, alfalfa, sweet corn, tobacco, pears, potatoes, peanuts, grain sorghum, peppers, beans, lettuce, peaches and citrus.
3. An intensive training program was conducted in cooperation with EPA, to educate pesticide users on the increased hazards of using replacements for DDT.
4. Preparation of Department materials for the public hearing on aldrin and dieldrin which started August 7, 1972, and is still in progress. Our essential use list was refined in accordance with most recent information from states having a need for the insecticides.
5. Research by DHEW identified ethylenethiourea, a degradation product of the ethylene-bis-dithiocarbamate fungicides, as a carcinogen. USDA personnel identified the needs for the fungicides, helped to evaluate possible risks of continued use, and initiated research to resolve unanswered questions. As a result, preharvest intervals were increased, but use of the fungicides was continued. Research to further define the issues is continuing.
6. Academic curricula designed and have been adopted by several universities to train students in systems of plant protection. Students will be given broad training in the principles, techniques, and theory of protecting crops against all classes of pests, in an integrated crop protection system.

7. Monitoring programs to determine the environmental impact of mirex when used for control of fire ant were continued and intensified to provide more reliable data. These data are of great importance in the public hearing that is now underway.

8. More economic impact studies were conducted on various pesticides to determine the costs that would be incurred if their use were discontinued.

9. A pest outbreak alert system was initiated so that the medical community in a local area could be alerted to possible high use of pesticides.

10. Preparations were made for USDA participation in a public hearing on 2,4,5-T. Some prehearing conferences have been held. Presentation of testimony is scheduled to begin in April, 1974.

11. Because of high hexachlorobenzene (HCB) residues in cattle in Louisiana, a research grant was awarded to study the residence time of HCB in animal tissues.

12. The Department participated actively in providing information and testimony on the subject of re-entry into fields treated with pesticides.

The following table shows the use of pesticide coordination funds in fiscal year 1973 and that estimated for 1974:

<u>Item</u>	<u>1973 Actual</u>	<u>1974 Estimate</u>
USDA Pesticide Safety Campaign conducted by the Department and other public agencies and for coordinating Department pesticide information with other Federal agencies	\$24,033	\$30,000
Salary and benefits, related to Office of Pesticide Coordinator	28,100	39,800
Coordination of Department participation in aldrin/dieldrin and 2,4,5-T hearings	2,114	20,000
Coordinate education and training need for certification of crop protection specialists	1,112	- -
Coordinate with States essential uses of selected pesticides	1,804	5,000
Coordinate contingency research on pesticides	- -	25,000
Coordinate forecasting of insect outbreaks that will require unusual pesticide use	14,924	10,000
Cooperative agreement with the Louisiana Agricultural Experiment Station for Research on hexachlorobenzene contamination of cattle	40,000	
Symposium on registration of viruses for pest control ...		5,000
Coordination with states on pesticide issues generally ..		20,000
Coordination of information on USDA pest management working group	9,284	- -
Balance	<u>36,629</u>	<u>3,200</u>
Total	<u>158,000</u>	<u>158,000</u>

Status of Construction Projects as of December, 1973

Status of research facilities authorized in prior years, and reported as uncompleted in the 1974 Explanatory Notes, is as follows:

Note: (Design criteria provided by ARS to specify the program requirements and form the basis for negotiation of architect-engineer contracts. Diagrammatic drawings provide the basis for the first review of the architect's design. Tentative drawings are provided by the architect for firming up cost estimates and as basis for developing the completed, and final working drawings).

<u>Location and Purpose</u>	<u>Funds Provided</u>		<u>Construction Status</u>
	<u>Year</u>	<u>Amount</u>	
<u>California, Albany</u> Wool utilization research.	1968 Plans	\$50,000 a/	Final working drawings completed in May 1970.
	1968 Plans	50,000 a/	Final working drawings completed in July 1970.
<u>Colorado, Akron</u> Soil and water conservation research.	1970 Plans	50,000 b/	Final working drawings completed in June 1973. Construction has not been scheduled.
	1973 Construction . Total	750,000 800,000	
<u>Louisiana, Baton Rouge</u> Soil and water conservation research.	1971 Plans	80,000	Diagrammatic and tentative drawings have been completed. Final criteria requirements are to be determined when construction funds are requested.
	1968 Plans	45,000 a/	Construction completed February 1973.
<u>Maine, Orono</u> Soil and water conservation research.	1971 Construction .	600,000	
	Total	645,000	

Status of Construction Projects as of December, 1973 - Cont.

<u>Location and Purpose</u>	<u>Year</u>	<u>Funds Provided</u>	<u>Amount</u>	<u>Construction Status</u>
<u>Maryland, Beltsville</u> For construction of electrical substation and central incinerator at Agricultural Research Center. (The 1975 Budget Estimates include \$1,400,000 for sewage treatment facilities.)	1970 Construction .	525,000 c/		Completion of electrical substation October 1972. Completion of incinerator expected in the third quarter of fiscal year 1974.
<u>Michigan, East Lansing</u> Research on avian leukosis.	1963 Construction .	450,000 c/		Construction completed June 1973.
<u>Nebraska, Clay Center</u> Meat animal research (Phase I).	1966 Plans 1967 Construction . 1971 Construction . Total	300,000 3,450,000 1,800,000 5,550,000		Major construction completed in November 1970. Additional construction being accomplished in four packages. Three packages have been completed and the other is expected to be completed in the third quarter of fiscal year 1974.
<u>Nebraska, Clay Center</u> Meat animal research (Phase II). (The 1975 Budget Estimates include \$5,020,000 for construction of Phase II.)	1968 Plans	250,000		Final working drawings completed December 1971.
<u>New York, Ithaca</u> Soil and water conservation research.	1968 Plans (See footnote c/)	40,000 a/		Planning has not been scheduled.
<u>New York, Plum Island</u> Additional animal and laboratory facilities.	1973 Plans	250,000		Architect-engineer contract awarded October 1973.

Status of Construction Projects as of December, 1973 - Cont.

<u>Location and Purpose</u>	<u>Year</u>	<u>Funds Provided</u>	<u>Amount</u>	<u>Construction Status</u>
<u>New York, Plum Island</u> Air pollution abatement and sewage control equipment.	1973 Plans and Construction .	1,060,000 c/		Architect-engineer contract for waste treatment system awarded in November 1972. Award of AE contract for modification of incinerators expected in third quarter of fiscal year 1974.
<u>Oregon, Corvallis</u> Ornamental research.	1966 Plans	21,500 a/		Construction completed April 1973.
	1971 Construction .	515,000		
	Total	536,500		
<u>Texas, Temple</u> Grassland and forage research.	1968 Plans	150,000		Construction contract awarded October 1971. Construction is expected to be completed in the third quarter of fiscal year 1974. Design criteria being prepared for additional construction. AE contract negotiation anticipated in third quarter of fiscal year 1974.
	1971 Construction .	1,500,000		
	1973 Construction .	500,000		
	Total.....	2,150,000		
<u>Washington, Puyallup</u> Ornamental research.	1968 Plans	3,500 a/		Construction completed April 1973.
	1971 Construction .	85,000		
	Total	88,500		
<u>West Virginia, Beckley</u> Soil and water conservation research.	1972 Plans	70,000		Architect-engineer contract awarded January 1972. Final working drawings completed December 1972. Construction has not been scheduled.
	1973 Construction .	700,000		
	Total	770,000		

Status of Construction Project as of December, 1973 - Cont.

<u>Location and Purpose</u>	<u>Year</u>	<u>Funds Provided</u>	<u>Amount</u>	<u>Construction Status</u>
West Virginia, Kearneysville				
Northeastern Appalachian Region				
Fruit crop research.	1973 Plans		200,000	Architect-engineer contract expected to be awarded in third quarter of fiscal year 1974.

a/ Funds provided from the Contingency Research Fund.

b/ Since \$50,000 appropriated in 1970 for planning a Soil-Water-Plant Research Laboratory, Ithaca, New York, and Soil and Water Research Laboratory, Akron, Colorado is insufficient to plan both of these facilities, the full amount will be used at Akron, Colorado.

c/ Planning funds were not appropriated separately but are included in the funds appropriated for construction.

CONTINGENCY RESEARCH FUND

The Contingency Research Fund, established by Congress in fiscal year 1962, is designed to provide a ready source of funds to meet unforeseen and immediate research needs. Releases from the funds are generally made in situations where an emergency exists, or for special needs such as an unexpected scientific "break-through", or for new diseases or pest problems where it appears inadvisable to wait for consideration of a request for funds for the project in the regular budget process. In allocating funds, the procedure ordinarily is to make no commitments for allocations from the fund beyond the current year.

In fiscal year 1973, releases from the Contingency Research Fund were made for the following purposes:

1973 Obligations

Animal Production Efficiency Research:

To expand screwworm research to assist Animal and Plant Health Inspection Service in solving critical problems associated with the eradication program	\$43,305
To initiate a toxicological study of hexachlorobenzene (HCB) in cattle	6,698

Plant Production Efficiency Research:

To determine the fate of five major fungicides and their toxic degradation product, Ethylenethiourea (ETU), in plants and soils	14,234
For extramural research on problems related to the varieties, diseases, harvesting and processing of wild rice	45,000
To develop technology to aid the Animal and Plant Health Inspection Service in eradicating rapidly spreading infestations of the citrus blackfly	37,941
For research to appraise performance of boll weevil pheromone in pilot boll weevil eradication experiment	76,759
For extramural research on the parasexual hybridization of sugarcane with protoplasts	40,000
For expansion of work on the revegetation of strip mine spoil banks at the Northern Great Plains Research Center, Mandan, North Dakota	7,000
For purchase of a cotton gin trash incinerator at the U.S. Cotton Ginning Laboratory, Stoneville, Mississippi	49,998

Research on Ornamentals, Trees, and Turf:

For extramural research on the problem of lethal yellows on palms	40,000
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Research on Soil and Water Conservation and Development:

For research on increasing irrigation efficiency in the Colorado River Basin through salinity control	115,003
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1973 Obligations

Research on Soil and Water Conservation and Development - Cont.

For expansion of work on the revegetation of strip mine spoil banks at the Northern Great Plains Research Center, Mandan, North Dakota	46,000
For purchase of an isotope ratio recording mass spectrometer to test soil fertility after fertilizer application and animal waste	11,999

Research on Pollution:

For in-house and extramural research to develop facilities for studying the use of sewage sludge on agricultural lands	53,776
For instrumentation for the Agricultural Chemical Transport Model at Morris, Minnesota	48,905
For purchase of an isotope ratio recording mass spectrometer to test soil pollution from fertilizer application and animal waste	25,792

Marketing Efficiency Research:

For extramural research on an internal disorder of wet-type (yam) sweet potatoes	28,590
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Research to Improve Human Health and Safety:

For purchase, application, and evaluation of radioactive Diethylstilbestrol (DES) as a growth stimulant for beef cattle	33,732
To determine the metabolic fate of Ethylenethiourea (ETU) in plants	5,780
For in-house and extramural research on teratogens from blighted potatoes	59,570
For in-house and extramural research on the interactions of potato blight, potato glycoalkaloids, pest resistance, and alleged teratogenic effects from ingestion of blighted potatoes	81,000
For extramural research on improved methods of reducing cotton dust levels in cotton processing and the relationship of cotton dust to byssinosis	<u>80,000</u>

Total, 1973 Obligations	951,082
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Unobligated balance	<u>48,918</u>
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Total available 1973 Contingency Research Fund	<u><u>1,000,000</u></u>
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Current activities. As of January 1974, a total of \$628,000 has been approved for release from the Contingency Research Fund in F.Y. 1974.

1974 Estimated
Obligations

Plant Production Efficiency Research:

Construction of runoff retaining system and bird proofing plots at the nematode research farm	\$ 35,000
Banana skipper moth problem	20,000
Conversion of national seed storage records to computer cards ...	32,000
Equipment for completion of pilot plant studies on alfalfa white protein	38,000
Identification and synthesis of the sex pheromone of the tobacco budworm	30,000
Developing high yielding rust resistant flax varieties and germ plasm with special emphasis on new races of rust	50,000
Evaluation and optimum usage of solar energy to supplement fossil fuels for crop drying	45,000

Research on Soil and Water Conservation and Development:

Effects of land recycling of leachate water from a sanitary landfill by sprayirrigation on soil, plant, and water composition ..	40,000
Controlling salt load in irrigation return flow	30,000

Research on Pollution:

Use of isotopes in agricultural research leading to more efficient use of fertilizers	60,000
Purchase of critical air pollution analyzing equipment essential in developing a strong air pollution program	50,000

Marketing Efficiency Research:

Alternative techniques for using various types of railroad cars to transport grain and soybeans	45,000
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Research to Expand Agricultural Exports:

Determination of optimum conditions for shipping horticultural products to markets in the far east	10,000
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Food and Nutrition Research:

Equipment for automating analyses of vitamins and minerals in foods	15,000
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Research to Improve Human Health and Safety:

Chemical structure of potato teratogen and development of assay procedures	78,000
Potential of diseases of fire ants in South America for controlling imported fire ants in the U.S.	<u>50,000</u>
Total 1974 approved for release from the Contingency Research Fund	628,000
Unallocated balance	<u>372,000</u>
Total available, 1974 Contingency Research Fund	<u><u>1,000,000</u></u>

AGRICULTURAL RESEARCH SERVICE

STATEMENT OF OBLIGATIONS AND MAN-YEARS

BY LOCATION

LOCATION	Actual 1973		Estimated 1974		Estimated 1975	
	Dollars	Man-Years	Dollars	Man-Years	Dollars	Man-Years
ALABAMA						
Auburn	\$1,082,842	58	\$1,072,600	58	\$1,129,300	59
Thorsby	73,057	6	- -	--	- -	--
Total	1,155,899	64	1,072,600	58	1,129,300	59
ALASKA, Palmer	402,319	12	412,200	12	418,100	12
ARIZONA						
Flagstaff	87,884	4	86,000	4	87,200	4
Mesa	176,766	9	143,300	7	145,300	7
Phoenix	2,245,913	118	2,504,400	119	2,539,700	119
Tucson	1,649,726	91	1,764,800	84	1,834,100	84
Total	4,160,289	222	4,498,500	214	4,606,300	214
ARKANSAS, Stuttgart	75,149	2	68,100	2	69,000	2
CALIFORNIA						
Albany	9,898,706	457	10,318,900	457	10,693,300	461
Brawley	526,652	32	614,800	32	623,100	33
Chico	123,154	9	37,200	3	- -	--
Davis	346,444	13	360,100	13	373,300	14
Fresno	1,130,589	68	1,223,500	68	1,340,000	68
Indio	191,589	12	163,400	12	165,700	12
La Jolla	114,722	7	8,500	--	- -	--
Pasadena	399,665	19	416,300	19	422,200	19
Pomona	111,784	6	- -	--	- -	--
Riverside	1,549,248	70	1,676,100	70	1,793,600	74
Salinas	626,576	33	654,700	33	663,700	33
Shafter	556,257	26	573,800	26	581,800	26
Total	15,575,386	752	16,047,300	733	16,656,700	740
COLORADO						
Akron	155,657	8	177,900	8	180,400	8
Denver	927,911	40	904,800	38	1,092,600	38
Fort Collins	1,626,176	74	1,747,600	74	2,450,500	77
Gunnison	54,800	3	- -	--	- -	--
Total	2,764,544	125	2,830,300	120	3,723,500	123
DISTRICT OF COLUMBIA						
Program	1,908,854	121	1,975,800	121	1,199,100	84
Headquarters						
Washington, D.C. Metro-						
politan Area, Agency						
Management Services and						
Centrally Financed						
Programs	18,370,260	505	21,613,300	500	23,121,000	500
Total	20,279,114	626	23,589,100	621	24,320,100	584
DELAWARE, Georgetown	213,617	16	221,400	10	224,100	10

STATEMENT OF OBLIGATIONS AND MAN-YEARS

BY LOCATION

LOCATION	Actual 1973		Estimated 1974		Estimated 1975	
	Dollars	Man-Years	Dollars	Man-Years	Dollars	Man-Years
FLORIDA						
Belle Glade	154,871	7	134,500	8	136,300	8
Bradenton	31,153	1	30,800	1	31,200	1
Brooksville	114,497	3	116,200	3	117,600	3
Canal Point	283,202	16	304,200	15	308,200	15
Fort Lauderdale	118,849	5	96,800	5	91,600	5
Gainesville	2,694,268	132	3,008,400	132	3,047,600	132
Lake Alfred	88,404	4	89,300	4	90,500	4
Miami	308,540	19	315,400	19	319,600	19
Olustee	437,945	22	--	--	--	--
Orlando	1,415,518	75	1,484,900	75	1,532,100	75
Quincy	153,937	9	--	--	--	--
Winter Haven	489,479	24	497,400	23	504,200	23
Total	6,290,663	317	6,077,900	285	6,178,900	285
GEORGIA						
Athens	4,536,407	214	4,624,600	214	4,686,200	214
Byron	895,520	50	939,300	50	952,000	50
Cairo	32,502	2	--	--	--	--
Dawson	439,024	26	433,200	25	439,000	25
Experiment	148,349	7	111,400	4	112,800	4
Savannah	1,283,614	82	1,365,800	82	1,384,500	82
Tifton	2,038,811	113	2,147,300	122	2,173,400	123
Watkinsville	628,611	45	690,000	45	698,900	46
Total	10,002,838	539	10,311,600	542	10,446,800	544
HAWAII						
Hilo	119,525	8	142,300	8	144,300	8
Honolulu	719,525	26	1,031,400	26	1,096,200	29
Total	839,050	34	1,173,700	34	1,240,500	37
IDAHO						
Aberdeen	123,939	5	121,600	5	123,300	5
Boise	331,470	20	359,400	20	364,500	20
Dubois	362,785	19	374,300	19	401,500	20
Twin Falls	941,723	55	984,400	55	1,015,000	55
Total	1,759,917	99	1,839,700	99	1,904,300	100
ILLINOIS						
Carbondale	68,463	3	--	--	--	--
Chicago	101,771	5	95,100	4	141,100	4
Peoria	10,164,104	492	10,095,900	489	10,391,200	489
Urbana	896,777	44	1,106,100	48	1,166,100	53
Total	11,231,115	544	11,297,100	541	11,698,400	546
INDIANA						
Lafayette	885,734	34	874,200	34	928,700	34
Vincennes	325,917	17	312,000	14	316,500	14
Total	1,211,651	51	1,186,200	48	1,245,200	48

STATEMENT OF OBLIGATIONS AND MAN-YEARS

BY LOCATION

LOCATION	Actual 1973		Estimated 1974		Estimated 1975	
	Dollars	Man-Years	Dollars	Man-Years	Dollars	Man-Years
IOWA						
Ames	5,614,532	277	6,337,400	277	6,895,300	280
Ankeny	248,685	12	236,300	11	239,800	11
Total	5,863,217	289	6,573,700	288	7,135,100	291
KANSAS						
Hays	29,289	1	- -	--	- -	--
Manhattan	1,577,021	65	1,777,100	67	1,800,700	69
Total	1,606,310	66	1,777,100	67	1,800,700	69
KENTUCKY						
Lexington	529,507	29	493,900	29	500,700	29
Frankfort	- -	--	30,200	1	30,600	1
Total	529,507	29	524,100	30	531,300	30
LOUISIANA						
Baton Rouge	757,921	46	766,900	45	777,300	45
Crowley	48,619	2	40,100	2	40,600	2
Houma	561,656	29	581,500	29	589,300	29
Jeanerette	143,353	9	53,900	4	54,600	4
Lake Charles	145,009	7	150,500	7	152,600	7
New Orleans	10,862,832	501	11,176,300	501	11,572,200	504
Shreveport	101,963	8	9,300	--	9,500	--
Tallulah	49,314	4	- -	--	- -	--
Total	12,670,667	606	12,778,500	588	13,196,100	591
MAINE						
Orono	290,200	9	361,200	14	381,000	14
Presque Isle	53,496	4	- -	--	- -	--
Total	343,696	13	361,200	14	381,000	14
MARYLAND						
Beltsville	32,953,828	1,707	33,340,000	1,680	34,454,300	1,693
College Park	56,153	3	59,300	3	60,000	3
Frederick	594,134	24	754,600	24	764,000	24
Glenn Dale	191,730	13	184,100	13	186,400	13
Hyattsville	1,319,951	83	1,738,900	88	2,170,400	88
Upper Marlboro	12,596	1	- -	--	- -	--
Total	35,128,392	1,831	36,076,900	1,808	37,635,100	1,821
MASSACHUSETTS, Waltham ...	23,320	1	- -	--	- -	--
MICHIGAN, East Lansing ...	1,386,293	69	1,468,600	69	1,489,400	69
MINNESOTA						
East Grand Forks	220,376	10	227,800	10	230,800	10
Minneapolis	121,179	4	118,800	4	120,500	4
Morris	570,451	32	673,600	38	683,200	38
St. Paul	851,925	36	884,900	36	901,400	36
Total	1,763,931	82	1,905,100	88	1,935,900	88

STATEMENT OF OBLIGATIONS AND MAN-YEARS

BY LOCATION

LOCATION	Actual 1973		Estimated 1974		Estimated 1975	
	Dollars	Man-Years	Dollars	Man-Years	Dollars	Man-Years
MISSISSIPPI						
Gulfport	178,472	10	141,600	9	143,600	9
Meridian	169,617	11	171,400	11	173,600	11
Oxford	990,909	55	1,049,000	55	1,133,100	55
Poplarville	62,537	3	62,300	3	63,100	3
State College	2,592,991	101	2,047,500	98	2,074,200	98
Stoneville	3,561,859	159	3,720,600	168	3,779,900	170
Total	7,556,385	339	7,192,400	344	7,367,500	346
MISSOURI, Columbia	1,685,256	89	1,830,800	89	1,908,900	90
MONTANA						
Bozeman	492,050	22	395,200	18	400,700	18
Miles City	301,085	7	347,400	7	351,300	8
Sidney	402,661	24	527,700	26	555,200	27
Total	1,195,796	53	1,270,300	51	1,307,200	53
NEBRASKA						
Clay Center	1,665,562	35	2,451,700	43	3,467,300	54
Lincoln	920,641	37	872,100	32	884,400	32
Mitchell	59,405	4	- -	--	- -	--
North Platte	46,669	2	- -	--	- -	--
Total	2,692,277	78	3,323,800	75	4,351,700	86
NEVADA, Reno	292,508	15	202,900	10	205,700	10
NEW JERSEY						
Belle Meade	118,027	8	140,800	8	173,300	8
Moorestown	248,685	14	263,300	13	250,100	13
New Brunswick	64,082	3	70,300	3	71,200	3
Total	430,794	25	474,400	24	494,600	24
NEW MEXICO						
Albuquerque	171,931	10	179,200	9	211,000	9
Las Cruces	276,010	14	538,300	25	545,100	26
Mesilla Park	332,285	21	- -	--	- -	--
Santa Rosa	55,243	5	58,800	4	59,600	4
Total	835,469	50	776,300	38	815,700	39
NEW YORK						
Farmingdale	25,076	2	- -	--	- -	--
Geneva	95,733	4	100,000	4	101,200	4
Ithaca	1,097,513	47	1,138,900	47	1,152,700	47
Plum Island	5,341,773	314	5,522,200	314	5,844,100	314
Total	6,560,095	367	6,761,100	365	7,098,000	365
NORTH CAROLINA						
Oxford	662,324	41	646,700	36	655,600	36
Raleigh	1,281,545	54	1,405,900	54	1,455,700	55
Total	1,943,869	95	2,052,600	90	2,111,300	91

STATEMENT OF OBLIGATIONS AND MAN-YEARS

BY LOCATION

LOCATION	Actual 1973		Estimated 1974		Estimated 1975	
	Dollars	Man-Years	Dollars	Man-Years	Dollars	Man-Years
NORTH DAKOTA						
Fargo	2,599,397	125	2,615,800	125	2,717,400	126
Grand Forks	767,574	12	1,041,600	13	1,383,400	18
Mandan	866,028	45	918,400	45	930,100	47
Total	4,232,999	182	4,575,800	183	5,030,900	191
OHIO						
Columbus	97,814	4	- -	--	- -	--
Coshocton	332,270	18	398,400	18	404,100	18
Delaware	288,811	14	277,600	14	281,500	14
Wooster	686,667	36	724,700	37	735,000	37
Total	1,405,562	72	1,400,700	69	1,420,600	69
OKLAHOMA						
Chickasha	523,132	41	567,400	37	612,700	37
Durant	497,619	25	503,400	25	510,200	25
Fort Reno	86,879	2	161,100	3	162,100	3
Stillwater	494,034	22	480,600	21	491,400	21
Woodward	208,770	15	212,500	14	215,400	14
Total	1,810,434	105	1,925,000	100	1,991,800	100
OREGON						
Burns	58,444	3	60,900	2	75,300	2
Corvallis	689,622	32	919,200	33	930,700	34
Hood River	35,814	2	- -	--	- -	--
Pendleton	193,310	8	213,500	9	216,500	9
Total	977,190	45	1,193,600	44	1,222,500	45
PENNSYLVANIA						
University Park	832,642	43	897,200	43	928,900	43
Wyndmoor	6,446,992	319	6,312,100	319	7,188,500	356
Total	7,279,634	362	7,209,300	362	8,117,400	399
SOUTH CAROLINA						
Charleston	613,056	36	617,000	36	625,400	36
Clemson	680,552	35	675,700	30	684,500	30
Florence	633,905	37	644,800	37	653,500	37
Total	1,927,513	108	1,937,500	103	1,963,400	103
SOUTH DAKOTA						
Brookings-Madison	724,225	40	704,400	36	714,200	36
Newell	130,162	9	- -	--	- -	--
Total	854,387	49	704,400	36	714,200	36
TENNESSEE						
Greenville	118,915	7	136,800	7	138,600	7
Jackson	61,137	4	58,500	3	63,500	3
Knoxville	603,412	30	674,600	30	683,800	30
Lewisburg	41,983	3	76,300	4	77,300	4
Total	825,447	44	946,200	44	963,200	44

STATEMENT OF OBLIGATIONS AND MAN-YEARS

BY LOCATION

LOCATION	Actual 1973		Estimated 1974		Estimated 1975	
	Dollars	Man-Years	Dollars	Man-Years	Dollars	Man-Years
TEXAS						
Austin	37,986	2	59,400	2	63,100	2
Beaumont	211,012	13	215,500	13	218,400	13
Big Spring	91,902	5	94,500	5	95,700	5
Brownsville	736,239	53	772,300	53	783,000	53
Brownwood	110,359	6	149,500	6	151,300	6
Bushland	632,933	32	655,400	32	664,300	32
Chillicothe	56,950	2	59,200	2	60,000	2
College Station	3,303,761	143	3,506,700	143	3,565,500	143
El Paso	38,445	2	39,300	2	39,800	2
Kerrville	945,260	61	1,101,100	61	1,115,800	61
Lubbock	533,583	27	559,300	27	566,900	27
Mission	287,047	13	263,400	13	432,400	13
Temple	412,699	23	409,500	23	948,200	23
Waco	73,372	6	- -	--	- -	--
Weslaco	1,852,275	98	1,743,900	92	1,765,700	93
Total	9,323,823	486	9,629,000	474	10,470,100	475
UTAH, Logan	1,246,122	58	1,204,900	53	1,220,900	55
VERMONT, Burlington	266,823	15	286,000	15	347,400	15
VIRGINIA						
Blacksburg	90,631	7	92,100	7	93,200	7
Front Royal	65,408	7	- -	--	- -	--
Holland	226,970	13	258,300	12	261,800	12
Norfolk	84,749	5	- -	--	- -	--
Richmond	91,260	6	89,300	4	119,400	4
Total	559,018	38	439,700	23	474,400	23
WASHINGTON						
Prosser	683,502	34	709,800	34	719,600	34
Pullman	1,143,828	60	1,134,200	55	1,150,200	55
Puyallup	52,791	3	54,400	3	55,100	3
Wenatchee	439,920	25	468,800	27	556,300	27
Yakima	930,463	49	953,700	49	970,000	49
Total	3,250,504	171	3,320,900	168	3,451,200	168
WEST VIRGINIA, Morgantown	95,199	5	79,900	5	80,800	5
WISCONSIN, Madison	994,020	50	900,200	43	912,900	43
WYOMING						
Cheyenne	142,484	10	154,800	10	156,900	10
Laramie	97,593	6	109,800	6	111,400	6
Total	240,077	16	264,600	16	268,300	16
PUERTO RICO						
Gurabo	30,465	3	- -	--	- -	--
Mayaguez	457,690	39	758,700	39	765,000	41
Rio Piedras	123,589	8	154,900	9	305,300	9
Total	611,744	50	913,600	48	1,070,300	50

STATEMENT OF OBLIGATIONS AND MAN-YEARS

BY LOCATION

LOCATION	Actual 1973		Estimated 1974		Estimated 1975	
	Dollars	Man-Years	Dollars	Man-Years	Dollars	Man-Years
VIRGIN ISLANDS, St. Croix	513,036	41	561,200	41	568,900	41
MEXICO, Iguala	887	--	1,200	--	1,200	--
OTHER FOREIGN COUNTRIES						
Africa, Kenya	65,557	2	64,200	2	64,200	2
Argentina	- -	--	3,000	--	3,000	--
France, Paris	145,810	9	188,600	9	188,600	9
Italy, Rome	84,354	4	99,300	4	99,300	4
Netherlands, Rotterdam .	136,567	5	182,600	5	182,600	5
Pakistan	15,605	1	58,100	2	58,100	2
Thailand	14,200	1	61,400	2	61,400	2
Total	462,093	22	657,200	24	657,200	24
Construction of facilities	3,460,000		- -	--	6,420,000	
Contingency research fund	- - <u>a/</u>	--	1,000,000		1,000,000	
Unobligated balance	9,291,921		- -	--	- -	--
.....						
Total, available or estimate	208,097,766	9,419	205,126,400	9,208	221,994,000	9,283

a/ Obligations of \$997,987 of the \$1,000,000 appropriated in 1973 are included in the projects above.

(b) Scientific Activities Overseas (Special Foreign Currency Program)

Appropriation Act, 1974	\$ 5,000,000
Budget Estimate, 1975	<u>10,000,000</u>
Increase in appropriation	<u>+5,000,000</u>

PROJECT STATEMENT
(On basis of appropriation)

Project	: 1973 : (actual)	: 1974 : (estimate)	: Increase or Decrease	: 1975 : (estimate)
1. Market development research	:	:	:	:
Section 104(b)(1)	\$2,087,000	\$ 700,000	+\$1,387,000	\$ 2,087,000
2. Agricultural and forestry	:	:	:	:
research Section 104(b)(3) ..	7,613,000	3,850,000	+3,613,000	7,463,000
3. Translation and dissemination of scientific publications,	:	:	:	:
Section 104(b)(3)	300,000	450,000	- -	450,000
Total, appropriation.....	<u>10,000,000</u>	<u>5,000,000</u>	<u>+5,000,000</u>	<u>10,000,000</u>

The following statement reflects carryover into succeeding years of actual or estimated prior year balances and shows total actual or planned obligations.

PROJECT STATEMENT
(On basis of available funds)

Project	: 1973 : (actual)	: 1974 : (estimate)	: Increase or Decrease	: 1975 : (estimate)
1. Market development research	:	:	:	:
Section 104(b)(1)	\$1,026,042	\$ 1,014,700	+\$1,072,300	\$ 2,087,000
2. Agricultural and forestry	:	:	:	:
research Section 104(b)(3) ..	7,561,238	9,321,536	-1,858,536	7,463,000
3. Translation and dissemination of scientific publications	:	:	:	:
Section 104(b)(3)	434,586	450,000	- -	450,000
Total, available or estimate.....	<u>9,021,866</u>	<u>10,786,236</u>	<u>-786,236</u>	<u>10,000,000</u>
Unobligated balance, start of year	-4,808,102	-5,786,236	+5,786,236	- -
Unobligated balance, end of year.....	<u>+5,786,236</u>	<u>- -</u>	<u>- -</u>	<u>- -</u>
Total, appropriation.....	<u>10,000,000</u>	<u>5,000,000</u>	<u>+5,000,000</u>	<u>10,000,000</u>

Explanation of Program

Foreign currencies which the Treasury Department determines to be excess to the normal requirements of the United States are used for expenses of carrying out programs of the Department of Agriculture as authorized by law and described under sections 104(b) (1) and 104(b) (3) of the Agricultural Trade Development and Assistance Act of 1954, as amended. Research is carried on through agreements negotiated with research institutions and organizations in foreign countries. The research must be of importance to American agriculture. It serves to preserve and expand existing markets and develop new ones for agricultural commodities. It provides for research supplementary to domestic programs on problems of farm, marketing, utilization, agricultural economics and human nutrition, and makes possible the conduct of research on exotic insect pests and diseases of plants and animals which could not be done in the United States. Specialized projects provide for the translation and dissemination of foreign language scientific publications. The increase proposed in 1975 would be used to purchase foreign currencies in those countries determined to be excess to the normal requirements of the United States to expand overseas research of value to U.S. agriculture. Total estimated cost in U.S. dollars (charged to regular appropriations) for program direction and supervision of projects in 1975 is \$640 thousand.

INCREASE

(1) An increase of \$5,000,000 for overseas research financed with foreign currencies.

Need for Increase: The increase of \$5,000,000 proposed in 1975 would be used to finance research overseas through the purchase of foreign currencies which have been determined by the Treasury Department to be available in amounts in excess of anticipated normal U.S. requirements. For 1975, excess currencies are expected to be available in seven countries--Burma, Guinea, India, Pakistan, Poland, Tunisia, and Arab Republic of Egypt. Based on surveys of the scientific capacity of foreign institutions and evaluation of research proposals submitted by these institutions, the total amount requested for 1975 can be effectively used to finance research of a mutual interest in all of the seven countries indicated above. Scientific capabilities in Burma and Guinea have been investigated and the Service is presently promoting research programs stressing tropical research studies in Guinea and general agricultural research in Burma. Based on present negotiations between the Government of India and the Government of the United States, we anticipate a relaxation of the restrictions imposed by India on foreign currency obligations, and the reestablishment of an active program by FY 1975.

Plan of Work: The proposed increase would be used to expand research to help countries accelerate their agricultural development process and to improve markets for U.S. agricultural commodities. The research will be conducted through new grants aimed at solving high priority agricultural problems such as new and improved uses of cotton; improvement of market quality of exported farm products; improvement of transportation and storage methods; research on cereal grains and oilseeds; research on pesticide residues; and research to develop and apply alternative agricultural production systems in narcotic producing areas. Other important program priorities to be continued will be pollution; food safety; nutrition and health; livestock production, protection, and quality; environmental resources; timber production; plant protection; new and improved plant germ plasm; and research to find parasites and predators to control crop pests of economic importance.

The estimated distribution by country for the \$5,000,000 increase in fiscal year 1975 is as follows: Burma, \$500,000; Guinea, \$500,000; India, \$610,000; Pakistan, \$1,500,000; Poland, \$1,040,000; Tunisia, \$150,000; and Arab Republic of Egypt, \$700,000. In the event that relations with India permit the re-development of foreign currency programs in that country, additional funds may be reallocated for such use from among the above listed countries.

Computation of Appropriation Increase

Future estimates of dollar needs are based on the number of approved research proposals on hand and those anticipated for research that cannot be accomplished within the United States, such as exotic diseases, or where unusual expertise exists in certain areas such as sunflower production.

The scientific capabilities of foreign institutions have been examined and evaluation of the research studies submitted has made certain that the additional appropriations requested would finance research that supplements and complements research conducted in the United States under regular dollar appropriations. These foreign research projects do not duplicate or displace domestic research conducted by the Department or its cooperators.

STATUS OF PROGRAM

In fiscal year 1958, the Department initiated a research grant program abroad utilizing foreign currencies from the sale of surplus agricultural commodities under Title I of Public Law 480. Originally confined to market development research authorized by section 104(b)(1) of P.L. 480, as amended, the program was subsequently expanded to include agricultural and forestry research under section 104(b)(3) of the law, as amended. In fiscal year 1966, the authorization changed to permit the use of all excess currencies for work performed under the Special Foreign Currency Program. Activities sponsored fall into the following general areas:

1. Agricultural research, including research on plant and animal production; use and improvement of soil, water and air; and research on marketing, use and effects of agricultural products.
2. Forestry research, including research on the protection of forests from fires, diseases and insects; on methods and procedures for increasing the growth of managed forests, and on properties and uses of forest products.
3. Agricultural economics research, including farm and market economics research and foreign trade analysis.

Dollar-financed research in these areas is conducted by the Agricultural Research Service, the Forest Service, and the Economic Research Service in their respective areas of functional and subject-matter responsibilities. Research under this program is designed to complement and not to duplicate or displace the dollar-financed research activities of these agencies.

Within the Department, primary responsibility for administration of this program is assigned to the Agricultural Research Service. The activities are coordinated with operations in the Forest Service, Economic Research Service, and the Foreign Agricultural Service by the Director, International Programs Division, ARS. The Director coordinates development of broad policies for operations of the program and coordinates the activities of the various Department agencies in carrying out research financed by foreign currencies. Initial arrangements and budget clearances for the research in foreign countries are made through the Department of State as required by Executive Order 10900, section 3(b) and (c), and through the Agricultural Attaches of the Foreign Agricultural Service of the Department.

Prior to executing any research agreement with a foreign institution, the Department again consults with the Agricultural Attaches and Heads of Missions to insure that the proposed projects would be consonant with the foreign policy of the United States.

Great care is exercised to make certain that research projects undertaken benefit American agriculture and do not develop undesirable competition for American agricultural products abroad. Careful attention is given to the type of institution conducting research under this program to make certain it has the facilities, equipment, and personnel to carry out sound and productive research. Because of these high standards about 56 percent of the proposals received from foreign institutions have been rejected by the Department; 40 percent of the proposals have been accepted, and agreements have been executed or are awaiting execution; and final determination has not yet been made on acceptance or rejection of the remaining 4 percent.

Selected Examples of Recent Progress: Through June 30, 1973, a total of 1,502 research agreements have been obligated with foreign research institutions. In fiscal year 1973, 86 agreements were obligated. Agreements vary in total amount for the life of the project from approximately \$12,000 to slightly over \$300,000. Recent examples of research progress under these agreements follow:

AGRICULTURAL RESEARCH

1. Superior oat varieties. Collections from Israel of the wild oat species, Avena sterilis, have provided U.S. scientists with the genetic resources to vastly improve the U.S. oat crop. Under a SFC grant Israeli scientists collected hundreds of samples of wild Avena sterilis in its native Mediterranean habitat. Fortunately, the wild species crosses readily with Avena sativa, the common oat species grown commercially in the U.S. The wild species carries strong resistance to parasitic fungus diseases that plague the U.S. oat crop. Our scientists have successfully transferred this disease resistance to several U.S. oat varieties which are now released and in production. In addition, the wild species was found to have up to one-third more protein than older U.S. varieties. Intensive efforts are now underway in Wisconsin, Minnesota, and Indiana, to transfer genes for higher protein content to U.S. varieties. A significant increase in protein quantity in addition to higher disease resistance would materially increase the value of the U.S. oat crop to U.S. farmers and consumers.
2. Biological control of insects. Six new pathogens described as potentially important for nonchemical control of insects have been isolated by Polish scientists under a SFC research project. One of the six is already being investigated as a possible commercial product. Work was concentrated on Polish insects closely related to two highly destructive North American insects, the cut worm and the corn ear worm. In addition to the five virus pathogens, a spore-forming protozoan was isolated which attacks both these insects. When a virus pathogen and the protozoan were used simultaneously, control was better than with either one singly. The most promising of the six new pathogens from the commercial angle appears to be a nuclear polyhedrosis virus which attacks the DNA material of insect cells and may have a wide spectrum of insect use in integrated insect control with reduced reliance on chemical pesticides.
3. Ketosis. Ketosis is a metabolic disease that causes severe losses to U.S. sheep and cattle industries. In sheep, the disease strikes during the stress of lambing, often leading to death losses of brood ewes and their new born lambs. In cows, the disease usually strikes shortly after calving and causes severe losses in milk and meat production. In a SFC study in Israel, scientists clarified the relationship between blood ketones and clinical ketosis. They found that blood ketones are derived from two sources: (a) From mobilized stored body fat, and (b) from digestive processes within the rumen. Further, the Israelis found that ketones resulting from mobilized stored body fat produce clinical ketosis, whereas, ketones derived from digestive processes are nutritionally useful to the animal and tend to counter the effects of ketones from body fat. The Israelis also developed a theoretical equation explaining the phenomena of ketosis and other metabolic diseases of ruminants. The results of this study provide a better understanding of the basic mechanisms of ketosis and are enabling nutritionists to plan feeding rations to reduce the incidence of ketosis in livestock.
4. Soybeans for food and feed. The soybean holds a dominant and increasingly important position in human and animal nutrition. Two SFC projects in Israel were aimed at clarifying some of the nutritional paradoxes of soybeans in order to improve their food and feeding value. Studies were made of treatments to remove or alter objectionable factors and of the compounds which may be responsible for antinutritional characteristics of soybean flour. Results have given a better understanding of the nature and causes of the poor nutritional quality of unheated soybean flour. Experimental animals fed diets composed of raw soybeans required supplemental vitamin B₁₂ and experienced some thyroid underactivity. A goitrogenic substance in raw soybean flour was isolated, partially purified, and tentatively identified. After further purification, the goitrogenic substance is expected to yield a product for treating hyperthyroidism. Basic information was developed about soybean agglutinin which is believed to be one of the antinutritional factors in raw soybean meal. By characterizing these antinutritional compounds, this project has advanced the long-standing effort to improve the nutritive value of soybeans for man and livestock.

5. Southern corn leaf blight. Indian scientists recently completed a timely SFC study bearing directly on U.S. corn blight research. The Indians studied species of Helminthosporium. In this large fungus group are found species and forms which cause several of our most destructive plant diseases commonly known as "leaf spots" or "leaf blights". One of the most notable discoveries of the study was that certain wild grasses are hosts for Helminthosporium species, including those capable of causing disease similar to southern corn leaf blight. The Indians tested U.S. commercial varieties of corn and found some of them susceptible to Helminthosporium forms obtained from wild grasses. This work contributes to basic research underway in the U.S. to find ways of preventing and controlling future outbreaks of southern corn leaf blight. The final report of this study has been distributed directly to scientists in the State agricultural experiment stations that are working on southern corn leaf blight. Thirty-seven publications and and/or presentations at meetings or congresses were produced from this study.
6. Deterioration and losses of grains in storage. Insects and molds cause heavy losses of stored grains and seeds. Research to prevent and reduce these losses has large potential benefits for all nations. Two recently completed projects in India and one in Poland were aimed at reducing these losses. In India 53 varieties of stored wheat were discovered to be resistant to rice weevils, 48 were resistant to lesser grain borers and 7 were resistant to both. Previously, no basic information was available on variability in resistance of grain varieties to insect infestation in storage. Some of the varieties, reported in this study as resistant, have been selected for further study at the U.S. Grain Marketing Research Center. They will be considered also for use in breeding new wheat varieties.
7. Eurasian watermilfoil. This exotic, water infesting weed poses a threat to U.S. waterways throughout the Eastern U.S. and has been found in Washington and Alaska. A SFC sponsored project in Yugoslavia has identified two insect species that show good promise for controlling milfoil biologically. One insect, a moth, prefers to feed on milfoil, but will feed on other aquatic plants if milfoil is in short supply. The other insect, a weevil, feeds only on milfoil, but does not have as voracious an appetite as the moth. Both insects are being introduced into the USDA-Florida cooperative biological quarantine facility, Gainesville, Florida, for thorough study before being released. The Yugoslavs also surveyed for possible disease causing pathogens. No specific pathogens were found, but it was discovered that milfoil is a host for fungi, of the genus Fusarium, a genus in which is found many disease agents of economic plants. This finding makes it even more important to develop ways for controlling milfoil.

FORESTRY RESEARCH

8. Forest tree diseases. On a Forest Service SFC project, Indian scientists surveyed for diseases of native and exotic trees. They identified more than 260 parasitic diseases capable of attacking more than 100 hosts. The Indians identified two previously undescribed diseases and five new tree hosts. Many of these tree diseases could be potentially devastating if accidentally introduced into the forests of the U.S. The project produced 14 publications on forest tree diseases which have been widely distributed. These publications contribute substantially to the literature of forest tree pathology and reinforce the need for international cooperation and vigilance against introducing exotic tree diseases into U.S. forests.

Special Foreign Currency Program
Research Proposals and Agreements
(Cumulative: to June 30, 1973)

	<u>Number of Proposals</u>				<u>Total Number of Agreements Obligated</u>		<u>Total Number of Agreements Currently Active</u>	
	<u>Received</u>	<u>Rejected</u>	<u>Awaiting Modification Negotiation or Review</u>	<u>Approved (Proposals) Awaiting Obligation</u>	<u>Number</u>	<u>Dollar Equivalent</u>	<u>Number</u>	<u>Dollar Equivalent</u>
Agricultural Research Service	3,714	2,093	161	200	1,260	\$77,592,500	372	\$25,509,892
Forestry Research	477	219	23	37	198	11,808,753	60	4,771,425
Agricultural Economics Res. .	152	100	4	5	43	1,962,246	21	1,078,265
Statistical Reporting Ser. . .	3	2	- -	- -	1	32,073	- -	-1,467
Totals	4,346	2,414	188	242	1,502	\$91,395,572	453	\$31,358,115

Obligations, Expenditures and Conversions of Foreign Currencies

Obligations: Through June 30, 1973, a total of \$96,555,419 (including \$4,044,733 for administrative expenses) has been obligated for activities under the Special Foreign Currency Program. In fiscal year 1974, an additional \$10,786,236 will be used. These obligations are summarized as follows:

Cumulative Obligations through F.Y. 1974
(dollars in thousands)

	Market Development Research (Sec. 104(b)(1))	Agricultural and Forestry Research (Sec. 104(b)(3))	Translation of Publications and Scientific Cooperation, Executive Office of the President a/ <u>Total</u>
1958	\$371.5	- -	\$371.5
1959	1,651.8	- -	1,653.5
1960	2,230.5	- -	3,023.7
1961	1,893.2	\$1,832.4	5,290.8
1962	2,859.0	5,294.6	8,749.4
1963	2,566.3	5,000.7	7,815.6
1964	3,214.8	4,466.4	8,236.7
1965	3,485.8	5,408.1	8,966.1
1966	703.7	3,877.4	4,381.6
1967	1,620.6	7,953.2	9,688.3
1968	991.9	6,317.0	7,264.8
1969	971.9	4,733.2	5,705.1
1970	790.5	4,076.0	4,866.5
1971	654.0	4,171.8	4,825.8
1972	840.4	5,853.6	6,694.0
1973	1,026.1	7,995.8	9,021.9
1974	(est.) 2,300.0	8,486.2	10,786.2
Totals	\$28,172.0	\$75,466.4	\$107,341.5

a/ This fund merged with Special Foreign Currency Program by the Department of Agriculture and Related Agencies Appropriation Act, 1969.

The following tables present a more detailed picture of the \$9,021,866 obligated in 1973 and the \$10,786,236 estimated to be obligated in 1974 for the Special Foreign Currency Program.

Special Foreign Currency Program, FY 1973 Obligations
(In thousands)

Country	Market Development Research Section 104(b)(1)	Agricultural and Forestry Research Section 104(b)(3)			Total
		Agri- cultural research	Agri- cultural economics research	Forestry research	
Brazil	-	-\$.6	-	-	-\$.6
Ceylon (Sri Lanka)	-	-4.5	-\$.7	-\$.7	-5.9
Colombia	-	-.1	-	-.1	-.2
Egypt (A.R.)	-	357.7	-	-	357.7
Finland	-	-	-	-.2	-.2
France	-\$2.8	-	-	-	-2.8
Germany, W.	-6.1	-	-	-	-6.1
India	299.4	757.5	12.9	128.6	1,198.4
Israel	-.5	33.3	1.9	2.6	37.3
Italy	22.0	11.7	-	11.7	45.4
Morocco	-	38.0	-	-	38.0
Pakistan	92.2	1,481.3	226.5	360.7	2,160.7
Poland	607.5	2,352.8	-	935.1	3,895.4
Switzerland	.2	-	-	-	.2
Tunisia	-	157.1	-	-	157.1
United Kingdom	2.5	-	-	-	2.5
Yugoslavia	11.8	593.6	21.2	83.8	710.4
Total	\$1,026.2	\$5,777.8	\$261.8	\$1,521.5	\$8,587.3
Transfer to National Science Foundation for translation of scientific publications					434.6
GRAND TOTAL					\$9,021.9

Special Foreign Currency Program, Estimated FY 1974 Obligations
(In thousands)

<u>Country</u>	<u>Market Development Research</u> Section 104(b)(1)	<u>Agricultural and Forestry Research</u> Section 104(b)(3)			<u>Total</u>
	<u>Agricultural research</u>	<u>Agri- cultural research</u>	<u>Agri- cultural economics research</u>	<u>Forestry research</u>	
Burma	- -	\$1.0	- -	- -	\$1.0
Egypt (A.R.)	\$79.0	959.0	- -	\$164.5	1,202.5
Guinea	- -	1.0	- -	- -	1.0
Greece	- -	- -	- -	.2	.2
India	335.0	787.0	\$165.0	298.0	1,585.0
Israel	- -	9.0	- -	1.0	10.0
Italy	30.0	20.0	- -	7.7	57.7
Japan	.2	- -	- -	- -	.2
Pakistan	161.0	1,915.6	139.3	264.7	2,480.6
Poland	323.5	2,446.0	- -	763.1	3,532.6
Tunisia	- -	150.7	- -	99.3	250.0
Turkey	- -	- -	- -	.4	.4
United Kingdom	5.0	- -	- -	- -	5.0
Yugoslavia	81.0	716.3	151.9	260.8	1,210.0
Totals	\$1,014.7	\$7,005.6	\$456.2	\$1,859.7	\$10,336.2
Transfer to National Science Foundation for translation of scientific publications					450.0
GRAND TOTAL					\$10,786.2

(c) Working Capital Fund, Agricultural Research Center

This Working Capital Fund has been a continuing operating fund established by the 1951 Agricultural Appropriation Act with an appropriation of \$300,000 to finance the operating costs of certain centralized services and facilities at the Agricultural Research Center, Beltsville, Maryland, pending receipt of reimbursements for such costs from the agencies provided with the services. The integrity of the original appropriation has been maintained from year to year by means of these reimbursements.

Effective July 1, 1973, the activities are being carried out and financed under the Agricultural Research Service regular appropriation. Services performed for other agencies are now on a reimbursable basis. The fund will be dissolved on June 30, 1974, and the initial \$300 thousand appropriation and \$336 thousand in leave liability and retained earnings will be returned to the General Fund of the Treasury.

The financial status of the working capital fund is as follows:

	June 30, 1973 (Actual)	June 30, 1974 (Estimated)	June 30, 1975 (Estimated)
<u>Assets:</u>			
Cash	\$680,729	\$586,000	-
Accounts receivable	1,098,648	100,000	-
Materials and supplies	236,039	-	-
Equipment	341,238	-	-
Total assets	<u>2,356,654</u>	<u>686,000</u>	<u>-</u>
<u>Liabilities (current)</u>	<u>1,000,908</u>	<u>50,000</u>	-
<u>Government Equity:</u>			
Initial appropriation	300,000	300,000	-
Donated assets	419,318	-	-
Retained earnings	636,428	336,000	-
Total Government equity	<u>1,355,746</u>	<u>636,000</u>	<u>-</u>

Obligations by activities for the central services financed through the Working Capital Fund are as follows:

	1973 (Actual)	1974 (Estimated)	1975 (Estimated)
1. Farm operations (Plowing, seeding, cultivating, spraying, harvesting and other farm operations related to field crop experiments and production of feed for experimental farm animals).....	442,723	72,600	-
2. Maintenance, repair, construction and alteration of research facilities.....	1,399,508	229,600	-
3. Maintenance and operation of research service facilities (Heating plant, sewage plant, water treatment and plumbing stations, and service operations such as guard, janitor and messenger service).....	1,801,573	295,600	-

	1973 (<u>Actual</u>)	1974 (<u>Estimated</u>)	1975 (<u>Estimated</u>)
4.Upkeep of roads and grounds.....	261,184	42,900	-
5.Materials and supplies, utilities, and equipment.....	<u>2,293,302</u>	<u>376,300</u>	<u>-</u>
Totals.....	<u><u>6,198,290</u></u>	<u><u>1,017,000</u></u>	<u><u>-</u></u>

Passenger Motor Vehicles

The 1975 Budget Estimate does not include any purchase of additional passenger motor vehicles. A total of 80 vehicles will be replaced.

Replacements

Replacements would be made of 80 (includes 2 buses) of the 496 (including 6 buses) passenger motor vehicles operated at field stations engaged in research. These vehicles are used in travel where no public transportation is available, such as to farms, ranches, cooperating experiment stations, etc., and in travel to remote sections of large stations. They are essential for collecting experimental data and materials necessary for facilitating research work.

It is estimated that all of the 78 passenger vehicles to be replaced will have mileage of more than 60,000 or be 7 or more years old. The 2 buses to be replaced will have been operated for over eight years.

Age and Mileage Data for passenger-carrying vehicles on hand as of June 30, 1973:

<u>Age-Year</u> <u>Model</u>	<u>Number of</u> <u>Vehicles */</u>	<u>Percent</u> <u>of Total</u>	<u>Lifetime</u> <u>Mileage</u> (thousands)	<u>Number of</u> <u>Vehicles */</u>	<u>Percent</u> <u>of Total</u>
1964	7	1	80-100	16	3
1965	42	9	60-80	60	12
1966	50	10	40-60	148	31
1967	28	6	20-40	154	32
1968	70	14	Under 20	108	22
1969	82	17		486	100
1970	83	17			
1971	90	19			
1972	26	5			
1973	8	2			
Total	486	100			

*/ Excludes 3 vehicles used in foreign countries, and 6 buses.

Aircraft

Replacements

The one replacement plane would be one designed specifically for agricultural work and would be used by technicians in investigating and demonstrating the use of special equipment for suppression of destructive insects attacking crops. Replacements will be made by purchase or from surplus sources. Planes rapidly become obsolete and uneconomical to repair and are subject to many mishaps. Replacement will not be made, however, if it is found practical and economically feasible to retain the present equipment.

ANIMAL AND PLANT HEALTH INSPECTION SERVICE

Purpose Statement

The Animal and Plant Health Inspection Service was established by the Secretary of Agriculture on April 2, 1972, under the authority of the Reorganization Plan No. 2 of 1953, and other authorities. The major objectives of the Service are to protect consumers from unwholesome meat and poultry products and to protect the animal and plant resources of the Nation from diseases and pests. These objectives are carried out under three major areas of activity as follows:

1. Meat and poultry inspection: Inspection of meat and poultry products in plants shipping in interstate and foreign commerce, review of inspection systems in foreign establishments producing for export to the United States, and providing technical and financial assistance to States to improve their meat and poultry inspection programs.
2. Animal and plant disease and pest control: Survey, diagnostic and quarantine activities are carried out to control, eradicate, or prevent the introduction of animal and plant diseases and pests. Control and eradication programs are conducted to combat existing diseases and pests.
3. Regulatory activities: Development of standards for, and the licensing and testing of veterinary biologicals to ensure their safety and effectiveness, and the inspection of certain establishments which handle animals intended for research and exhibition purposes, as defined by law, to insure their humane treatment.

The Service maintains central offices in the Washington metropolitan area. However, most of the Service's work is conducted at numerous field locations, meat and poultry plants, and at points of entry, in the fifty states, Puerto Rico, and the Virgin Islands. Much of the work is conducted in cooperation with State and local agencies, private groups, and foreign governments.

Available Funds and Man-Years
1973 and Estimated, 1974 and 1975

Item	1973		Estimated, 1974		Estimated, 1975	
	Amount	Man-Years	Amount	Man-Years	Amount	Man-Years
Animal and Plant Health:						
Inspection Service:	a/		b/			
Appropriation.....	\$304,647,436	14,571	\$303,523,000	14,633	\$394,769,000	14,852
Obligations under						
other USDA appro-						
priations:						
Agricultural						
Research Service:						
Pesticides coordina-						
tion.....	14,924	- -	15,000	- -	15,000	- -
Provide opera-						
tional super-						
vision for boll-						
weevil field						
eradication						
trials.....	425,000	11	- -	- -	- -	- -
Develop mass						
rearing proce-						
dures and per-						
form field						
evaluations in						
the gypsy moth						
research						
program.....	289,632	22	329,000	22	337,500	22
Agricultural Mar-						
keting Service:						
Meat grading....	- -	- -	97,200	7	98,500	7
Miscellaneous						
activities.....	41,769	3	49,315	3	49,315	3
Total, Other						
USDA Appro-						
priations.....	771,325	36	490,515	32	500,315	32
Total, Agricultural						
Appropriation Bill....	305,418,761	14,607	304,013,515	14,665	395,269,315	14,884
Animal Quarantine						
Station.....	- -	- -	100,000	- -	327,000	- -
Other Funds:			c/			
Federal funds.....	932,843	60	5,472,612	57	1,095,073	57
Non-Federal funds....	25,071,620	359	30,083,873	398	30,825,612	398
Total, Animal and Plant						
Health Inspection						
Service.....	331,423,224	15,026	339,670,000	15,120	427,517,000	15,339
End-of-year employment:	1973 Actual		1974 Estimated		1975 Estimated	
Permanent full-time....	13,773		13,970		14,100	
Other d/.....	2,204		1,775		1,775	
Total.....	15,977		15,745		15,875	

- a/ Excludes \$251,564 transferred to GSA for space rental cost. Includes \$18,767,507 appropriated in fiscal year 1973 and \$62,900,000 in fiscal year 1975 for repayment with interest to the Commodity Credit Corporation of funds advanced under the emergency authority of the Secretary (21 U.S.C. 129). The amounts obligated under the emergency authority from funds advanced from CCC not included in the above were:

	<u>1973</u>	<u>1974 Estimate</u>
Exotic Newcastle Disease.....	\$36,461,632	\$1,538,368
Hog cholera.....	<u>5,700,000</u>	<u>- -</u>
	42,161,632	1,538,368

- b/ Excludes \$53,000 for transfer to GSA for space cost. Includes proposed supplemental for increased pay cost of \$17,651,000.
- c/ Includes \$4,400,000 transfer appropriation account from Agency for International Development.
- d/ Excludes 283 disadvantaged youth and public service trainees in all years.

(a) Animal and Plant Health Inspection Service

Appropriation Act, 1974	\$285,925,000
Budget Estimate, 1975	<u>394,769,000</u>
Increase in Appropriation	+108,844,000

Adjustments in 1974:

Appropriation Act, 1974	\$285,925,000	
Transfer to General Services Administration for rental of space	-53,000	
1974 Supplemental Appropriation for Pay Costs.....	<u>+17,651,000</u>	
Adjusted base for 1974		303,523,000
Budget Estimate, 1975		<u>394,769,000</u>
Increase over adjusted 1974		+91,246,000

SUMMARY OF INCREASES AND DECREASES
(On basis of adjusted appropriation)

	1974 <u>Estimate</u>	<u>Increase</u>	1975 <u>Estimate</u>
Meat and poultry			
inspection	\$174,832,600	+\$5,915,000	\$180,747,600
Boll weevil	872,100	+100,000	972,100
Foot-and-mouth disease			
(Darien Gap)	- -	+1,962,000	1,962,000
Screwworm	14,424,800	+3,887,000	18,311,800
Veterinary biologics lab ...	- -	+9,600,000	9,600,000
Repayment to Commodity			
Credit Corporation	- -	+62,900,000	62,900,000
GSA space rental costs	- -	+4,040,000	4,040,000
Annualization of the pay cost increase effective			
in FY 1974	17,651,000	+2,842,000	20,493,000
All other	95,742,500	- -	95,742,500
Total available	<u>303,523,000</u>	<u>+91,246,000</u>	<u>394,769,000</u>

PROJECT STATEMENT
(On basis of adjusted appropriation)

Project	1973 (actual)	1974 (estimated)	Increase	1975 (estimated)
1. Meat and poultry inspection.....	\$168,133,170	\$185,902,200	+\$9,206,000 (1)	\$195,108,200
2. Plant disease and pest control:				
(a) Plant protection.....	25,979,279	25,877,300	+1,014,000	26,891,300
(b) Agricultural quarantine inspection.....	17,951,818	20,440,500	+885,000	21,325,500
Total, Plant disease and pest control.....	43,931,097	46,317,800	+1,899,000 (2)	48,216,800
3. Animal disease and pest control:				
(a) Animal health a/.....	78,459,966	65,124,700	+70,420,000	135,544,700
(b) Veterinary biologics....	3,956,876	4,678,300	+121,000	4,799,300
Total, Animal disease and pest control.....	82,416,842	69,803,000	+70,541,000 (3)	140,344,000
4. Construction of facilities.....	880,000	- -	+9,600,000 (4)	9,600,000
5. Contingencies.....	- -	b/ 1,500,000	- -	1,500,000
Unobligated balance.....	9,286,327	- -	- -	- -
Total available or estimate.....	304,647,436	303,523,000	+91,246,000	394,769,000
Transfer to GSA.....	+251,564	+53,000		
Proposed Supplemental for pay increase costs.....	- -	-17,651,000		
Meat and poultry and pay cost supplementals.....	-15,595,000	- -		
Total, appropriation.....	289,304,000	285,925,000		

a/ Includes \$18,767,507 appropriated in fiscal year 1973 and \$62,900,000 in fiscal year 1975 for repayment with interest to the Commodity Credit Corporation of funds advanced under the emergency authority of the Secretary (21 U.S.C. 129). Amounts obligated under the emergency authority from funds advanced from CCC and which are not included above were:

	1973	1974 Estimate
Exotic Newcastle Disease.....	\$36,461,632	\$1,538,368
Hog cholera.....	5,700,000	- -
Total.....	42,161,632	1,538,368

b/ The amount appropriated for contingencies in fiscal year 1973 was \$1,500,000. This full amount was obligated during the fiscal year and is reflected under the program for which it was obligated. Details of contingency fund obligations are shown on page 109.

EXPLANATION OF PROGRAM

The Appropriation "Animal and Plant Health Inspection Service" funds the following activities.

1. Meat and poultry inspection.---Federal inspection is required for all meat, poultry, and processed products moving in interstate and foreign commerce. All meat and poultry moving in intrastate commerce must be federally inspected or inspected by States with inspection systems meeting Federal standards. Activities include inspection of animals, carcasses, meat and poultry products at various stages of handling and processing, and the regulation of labeling. The Federal program also provides financial and technical assistance to States for improving the quality of their inspection programs. Extensive laboratory analyses are conducted for detection of chemical residues, antibiotics and other additives.

Meat and poultry and their products are inspected under the authority of the Federal Meat Inspection Act (21 U.S.C. 601-624; 641-645; 661; 671-680) and the Federal Poultry Products Inspection Act (21 U.S.C. 451-470). There are several other acts relating to the inspection program and administration, such as the Humane Slaughter Act (7 U.S.C. 1901-1906) and miscellaneous provisions of law relating to meat inspection (21 U.S.C. 98).

The volume of inspections and examinations is indicated by examples given in the following table:

	1973 <u>actual</u>	1974 <u>estimate</u>	1975 <u>estimate</u>
Federally inspected establishments:			
Meat.....	5,089	5,560	5,980
Poultry.....	1,820	2,070	2,310
Federally inspected production:			
(Millions of pounds)			
Meat slaughter.....	34,910	34,691	35,211
Meat processing.....	52,119	53,119	55,349
Poultry slaughter.....	10,551	11,115	11,560
Poultry processing.....	20,169	22,842	24,929
Cooperative agreements with States:			
Meat.....	41	40	40
Poultry.....	32	31	31

2. Plant disease and pest control.---In cooperation with the States, programs are conducted to eradicate or prevent spread to uninfested areas of certain plant pests which are established in this country. Surveys are conducted to detect harmful pests and diseases. An inspection program is conducted at ports of entry to prevent the entrance of insects, nematodes and diseases which are harmful to the plant life of the United States. Plants and plant products are also certified for export.

The statutory authority supporting this program is contained in Title 7 U.S.C., Agriculture, Chapters 7, 7a, 7b, 8, 11, 15, 17 and 55; and Title 49 U.S.C., Transportation, Chapter 20. The principal legislative authority for these activities is contained in the Federal Plant Pest Act; the Plant Quarantine Act; and Section 102 of the Organic Act of 1944.

The level of activities for plant protection is shown by the selected examples that follow:

	1973 <u>actual</u>	1974 <u>estimate</u>	1975 <u>estimate</u>
Acres treated (thousands)			
Boll weevil <u>1/</u>	550	650	600
Grasshopper.....	3,087	3,000	1,000
Gypsy moth.....	59	50	50
Imported fire ant <u>1/</u>	14,100	12,000	12,000
Japanese beetle.....	13	14	14
Witchweed <u>1/</u>	244	250	250
Sterile flies released (millions):			
Mexican fruit fly.....	18	23	23
Sterile moths released (millions):			
Pink bollworm (adult moth).....	157	155	155
Parasites released:			
Gypsy moth (thousands).....	217	200	225
Cereal leaf beetle (millions).. .5		1.0	1.2

1/ Aggregate acres.

The level of activities for agricultural quarantine inspection at ports of entry is as follows:

	1973 <u>actual</u>	1974 <u>estimate</u>	1975 <u>estimate</u>
Plant and animal byproduct import inspection:			
Airplanes (thousands).....	323	326	330
Vessels (thousands).....	77	80	82
Vehicles from Mexico (millions)	39	40	41
Baggage, pieces (millions).....	117	120	123
Mail packages (millions).....	69	70	71
Interceptions (thousands):			
Unauthorized plant materials...	674	676	678
Plant pests.....	38	40	41
Imported animal byproducts, pounds (millions).....	640	700	720

3. Animal disease and pest control.---Programs are conducted to keep communicable diseases of foreign origin from entering this country and to prevent the spread of disease through interstate shipments of livestock or distribution of impure or impotent veterinary biologics. In cooperation with States, other programs are directed at the control and eradication of livestock diseases present in this country. The animal welfare program is concerned with the humane care and handling of approximately 40 million warmblooded animals.

The statutory authority for this work is contained in Title 7 U.S.C., Agriculture, Chapters 15, 17, 30 and 54; Title 15 U.S.C., Commerce and Trade, Chapter 44; Title 19 U.S.C., Customs Duties, Chapter 4; Title 21 U.S.C., Food and Drugs, Chapters 4, 5 and 45; Title 46 U.S.C., Shipping, Chapter 15; and Title 49 U.S.C., Transportation, Chapter 20. Principal legislative authority for these activities is contained in the Act of May 29, 1884; Act of August 30, 1890; Act of February 2, 1903; Act of March 3, 1905; Tariff Act of June 17, 1930; Act of February 28, 1947; Act of September 6, 1961; Act of July 2, 1962; the Animal Welfare Act; the Horse Protection Act; and the Virus-Serum-Toxin Act.

The level of activities for the major control programs on animal diseases and pests is as follows:

	1973 <u>actual</u>	1974 <u>estimate</u>	1975 <u>estimate</u>
Brucellosis:			
Certified Free States.....	30	37	39
Modified Certified Free States...	22	15	13
Certified Brucellosis Free			
counties.....	1,942	2,200	2,250
Total number of infected herds			
found during year.....	13,000	11,000	10,500
Hog Cholera:			
Certified Free States.....	45	48	50
Confirmed Primary Outbreaks.....	43	5	- -
Screwworm:			
Cases in U.S. outside of barrier			
zone.....	41,974	600	600
Cases in U.S. part of barrier			
zone.....	33,938	13,200	1,000
Cases in Mexico part of barrier			
zone.....	27,819	16,300	10,000
Sterile fly production			
(millions weekly).....	194	125	230
Scabies:			
Number of counties quarantined			
for cattle scabies by June 30...	12	- -	- -
Tuberculosis (cattle):			
States accredited free.....	5	8	11
Herds located.....	38	34	26
Herds depopulated (per yr.).....	17	17	15
Cattle ticks:			
Premises quarantined outside			
barrier zone because of infes-			
tation with cattle fever ticks..	111	30	30
Exotic Newcastle Disease			
Surveillance Program:			
Investigations of suspected			
outbreaks.....	- -	10	10
Number of flocks under surveil-			
lance.....	- -	339	30
Birds depopulated (thousands).....	8,212	150	- -
Veterinary biologics:			
Number serials produced.....	14,516	14,500	14,500
Percent tested for:			
Potency.....	26	25	25
Purity.....	8	10	10
Sterility.....	23	25	25
Regulatory inspections conducted.	21	40	40
Import inspection:			
Animals (thousands).....	1,301	1,350	1,400
Personally owned pet birds			
(thousands).....	1.5	3.5	5.2
Animal Care:			
Complaint investigation.....	345	500	500
Number of inspections conducted			
under Animal Welfare Act.....	11,943	22,200	22,200
Number of horse shows inspected			
under Horse Protection Act.....	495	125	25

4. Construction of facilities.---This activity provides for construction of authorized facilities needed to carry out previously mentioned program activities. Funds from prior year appropriations, still available for obligation, include \$580,000 for planning a Veterinary Biologics Laboratory, \$300,000 for planning an offshore animal quarantine station, and \$1.5 million for construction of a new animal import center to replace the Clifton, New Jersey quarantine station.

5. Contingencies.---Of the total annual amounts provided under this appropriation, \$1.5 million is apportioned for use pursuant to section 3679 of the Revised Statutes, as amended, for the control of outbreaks of insects, plant diseases, and animal diseases to the extent necessary to meet emergency conditions.

JUSTIFICATION OF INCREASES AND DECREASES

- (1) An increase of \$9,206,000 for meat and poultry inspection activities consisting of:

GSA space rental costs.....	+\$1,453,000
Annualization of pay cost increases	
effective in fiscal year 1974.....	+\$1,838,000
Meat and Poultry Inspection (\$185,902,200 available	
in FY 1974).....	+\$5,915,000

Need for Increase: The Department is charged with the responsibility of insuring that the meat and poultry products available to consumers are wholesome in every respect and labeled according to law. To fulfill this responsibility, every establishment which slaughters or processes meat and poultry shipped in inter or intrastate commerce is inspected by Federal or State inspectors respectively. Any unwholesome, adulterated or improperly labeled products are removed from human food channels.

Under the authority of the Wholesome Meat Act and the Wholesome Poultry Products Act, the Federal Meat and Poultry Inspection Program must assume responsibility for intrastate inspection in those States which are unwilling or unable to establish and maintain an inspection system at least equal to the Federal. Assumption of such programs in the States of Washington and Nevada were made in the summer of 1973 in order to provide essential consumer services. Assumption of these inspection programs has resulted in additional costs for which funding is required. Additionally, as a result of normal program growth, we are anticipating an increase in both the number of new plants and expansion in the plants currently inspected. Approximately 480 new plants requiring Federal inspection are estimated for FY 1975. As a result of the expansion of the Federal inspection program, 189 new meat and poultry inspection positions will be needed at an annual cost of \$3,395,000. In addition, the Civil Service Commission reclassified 1,200 slaughter inspectors to the next higher grade, resulting in an additional program cost of \$1,048,000.

In those States which have established and are maintaining inspection systems at least equal to the Federal system, the Federal meat and poultry inspection program funds half of the cost by direct grants to the States. Costs of State programs are increasing due not only to program growth in the States, but also to the entry of some States into aspects of inspection, such as laboratory work and compliance evaluation, in which they have not previously worked. Tentative budgets from cooperator States indicate an increase in grant level of \$2,000,000 for 1975. The budget estimate reflects a decrease of \$528,000 due to termination of the cooperative agreement with the District of Columbia for inspection of retail establishments.

Plan of Work: The inspection of meat and poultry and their products is carried out by resident inspectors in slaughtering and processing plants. All livestock and poultry are inspected before and during slaughter to detect disease and symptoms of harmful pesticide, drug or biological residues and to prevent contamination of the carcasses during the slaughter operation. Resident inspectors also inspect

the further processing of meat and poultry products into food products destined for the consumers. Inspection is carried out to insure that processing is done in a sanitary environment; to detect and prevent spoilage and contamination, the use of harmful chemicals, and adulteration with extenders; and to require truthful labeling.

(2) An increase of \$1,899,000 for plant disease and pest control consisting of:

GSA space rental costs.....	+\$1,354,000
Annualization of pay cost increases	
effective in fiscal year 1974.....	+\$445,000
Boll weevil (\$905,800 available in FY 1974).....	+\$100,000

Need for Increase: The recently enacted "Farm Bill" (Agriculture and Consumer Protection Act of 1973) directed the Secretary to begin a program of eradication for the boll weevil and other insect pests of cotton "...if the Secretary determines that methods and systems have been developed to the point that success in eradication of such insects is assured." The Senate Appropriation Committee's Report on the FY 1974 Appropriation Bill recommended that this program be reviewed prior to preparation of FY 1975 budget estimates. The program if adopted, would necessarily extend over many years and involve an estimated total cost of \$300 to \$500 million. Extensive and indepth preplanning and analysis is essential for decisions on feasibility, execution, and funding. Environmental impact analyses and the many detailed studies necessary to plan such a program will require large time demands for scientific and technical people in several fields. Entry into such a program without such studies and analyses would seriously jeopardize probability of success.

Plan of Work: Analyze the variety of information and actions necessary for such a program, the availability of each, and how each needs to fit into a total program plan if success is to be achieved. Specific examination is needed to:

- (1) Define the cotton growing area which requires action and the acreage of cotton involved.
- (2) Define the boll weevil problem in all areas. There are considerable differences in many production practices, topography, severity of the problem, and other factors which will have a bearing on suppression methods used and costs.
- (3) Define the program costs for each area in order to arrive at cost estimates.
- (4) Define the regulatory requirements both for program operations and prevention of reinfestation and determine if State enabling legislation is required.
- (5) Determine a sequence of program activities, such as when to survey and map fields, start diapause program, set up traps and trap plots and the role of the farmer in these actions, based on current production practices.
- (6) Develop recommendations on when to initiate program areas included in each increment each year and other factors.
- (7) Develop a budget for the program to include requirements for manpower, equipment, contractual services, rearing of sterile insects, pesticides, and other detailed items with cost estimates, and to determine procedures for cooperative funding.

(3) An increase of \$70,541,000 for animal disease and pest control activities consisting of:

GSA space rental costs.....	+\$1,233,000
Annualization of pay cost increases	
effective in fiscal year 1974.....	+\$559,000
Foot-and-mouth disease (no funds available in FY 1974)	+\$1,962,000
Screwworm (\$14,807,300 available in FY 1974).....	+\$3,887,000
Repayment to CCC.....	+\$62,900,000

(a) An increase of \$1,962,000 to prevent the introduction of foot-and-mouth disease from South America into Panama and other FMD free countries to the North, including the United States.

Need for Increase: With the completion of the Pan-American Highway through the Darien Gap, the United States will face the possibility of an invasion of foot-and-mouth disease from South America. Without a cooperative program, the possibility of the disease achieving a foothold in Central America and then gaining entry into the United States is greatly increased. If the disease gained entry into the United States, a very large and costly Federal program would be needed to control and/or eradicate the disease. Livestock producers would suffer severe economic losses, and consumers would very likely be faced with meat shortages and increased prices.

The Darien Gap's dense jungles and swamps have heretofore provided an effective barrier against the introduction of FMD from South America into Panama and other northern countries. During the building of the highway, and after its completion, the risk of introduction of FMD into Panama will be greatly increased. This danger is already materializing with the influx of people and livestock along the Panama-Colombia border.

Plan of Work: This funding would be used to maintain a cattle free zone approximately 25 miles wide along the Colombia-Panama border and an area for controlled livestock production and foot-and-mouth prevention on both sides of the cattle free zone.

Most of the work will be carried out under agreement between Colombia, Panama and the United States with personnel hired locally. Six U.S. employees will be stationed in the area permanently. Locally hired livestock inspectors, laborers, drivers, etc., will total about 327 man-years annually. Costs for personnel, and travel within the control area are estimated at \$1.6 million and the balance of the requested funds will be needed primarily for supplies and equipment.

(b) An increase of \$3,887,000 to reduce the costs of keeping screwworms out of the United States by relocating the barrier zone from the Mexico-United States border area to the Isthmus of Tehuantepec.

Need for Increase: The present 2,400 mile barrier along the U.S.-Mexico border exposes American livestock to screwworm infestation. Such a large area cannot always be effectively controlled with present sterile fly production. The establishment of the new barrier across the narrow Isthmus of Tehuantepec will allow for more effective maintenance, eliminate the annual threat of screwworm migration from Mexico, and reduce the annual cost to maintain the barrier.

There are several major factors affecting the need for increased funds in FY 1975. Labor costs will be higher than previously estimated. Labor costs in Mexico have increased generally by 15 - 25%. This has an effect not only on the direct cost for Joint Commission employees, but on the cost of construction, equipment and supplies as well.

The cost of some liquid media components has increased tremendously in the past year. For example, the price of spray-dried blood purchased in the United States was 11 cents per pound a year ago. The current U.S. price is 42 cents per pound. About three million pounds of spray-dried blood will be required annually for full production of sterile screwworm flies at the Mexican plant. While supplies are expected to be available in Mexico at a slightly lower price, the current estimate of cost is still more than three times the previous estimate. Another component of the media, cottage cheese, has increased from 42 cents a pound two years ago to 69 cents a pound currently.

The cost of constructing and equipping the screwworm rearing facility has also increased. The introduction of a new, more efficient strain of flies, having exceptional longevity requires more space for rearing than previously used strains. While the original plan called for the use of modified surplus ships as a fly raising facility, it became apparent in the past year that the cost of modifying and equipping these ships would greatly exceed the original estimate. In view of this, the feasibility of constructing a land based fly raising facility was studied and the cost estimate for such a facility was developed. The cost estimate of

\$7.6 million is about \$2 million higher than the original estimate for a ship based facility, but about \$8 million lower than the current estimate for a ship based facility. For this reason, a land based facility will be constructed.

Funds available in 1974 are sufficient to allow initiation of construction of the fly raising facility. However, since the current construction cost estimate is higher than was expected and the full amount of the 1974 President's Budget was not approved by the Congress, completion of construction and equipping of the plant cannot be accomplished in 1974. Funds will be needed in 1975 to complete construction, purchase equipment and permit full-scale operation of fly production and release.

Plan of Work: Eradicate the screwworm in Mexico north of the Isthmus of Tehuantepec using the sterile fly release technology. The FY 1975 increase would be used to complete construction of the sterile screwworm fly production plant near Tuxtla Gutierrez, Chiapas, Mexico; to purchase the necessary fly production equipment to be installed in this plant; and to initiate sterile screwworm fly production during the last quarter of FY 1975. It will also be used to carry out field operations such as livestock inspection, surveys and an information program aimed at livestock owners to coordinate their activities in support of the program which have been a major element in the success of the program to date. These projects will be carried out through the U.S.-Mexico Joint Commission for the eradication of screwworms, established for this purpose by an agreement between the two countries.

(c) An increase of \$62,900,000 for repayment to the Commodity Credit Corporation.

Need for Increase: A total of \$62,900,000 will be required to repay CCC for advances, and interest thereon, made during FY 1972 and FY 1973 to cover the cost of combating exotic Newcastle and hog cholera diseases. The 1974 Budget included \$49,000,000 for this purpose which was not approved by the Congress. An estimated \$3,000,000 to cover additional interest will be needed because of this delay. Also, \$10,900,000 of the total amount will be for repayment of funds advanced, and interest, after the 1974 Budget was presented. The funds were used to cover the costs of supplemental Newcastle indemnity payments.

(4) An increase of \$9,600,000 for construction of the first phase of a Veterinary Biologics facility.

Need for Increase: The Department has a legal mandate to make sure that all veterinary biologicals reaching the public are effective and safe. However, the shortage of adequate space has proven to be a serious constraint on progress.

Present activities are being pursued in a part of the National Animal Disease Center (NADC) in Ames, Iowa. In addition, space has been rented in five other locations in the city of Ames, none of which were initially designed to meet program needs. The resulting inefficiencies are compounded by the physical separation of the work force. Also, these facilities lack sufficient laboratory space and fall far short of present needs for test-animal-holding space.

The Phase I facility would provide the minimum space needed to adequately replace all space presently occupied by Veterinary Biologics personnel and permit more efficient and productive operations in a single improved facility, thereby bringing us closer to fulfilling the purposes of the Virus-Serum-Toxin Act.

Plan of Work: This facility will be used to support an expanded biologics program in the following areas:

- (1) Establishment of criteria for the purity, safety, and efficacy of Veterinary Biologics.
- (2) Development, evaluation, and establishment of uniform methods of testing for potency, sterility, purity, and safety.
- (3) Production, evaluation, and supplying of references and reagents to assure validity of test results.
- (4) Testing of production lots of licensed biologics at a sampling rate which will provide a high degree of assurance that worthless, contaminated or harmful biologics are identified.

STATUS OF PROGRAM

MEAT AND POULTRY INSPECTION

Selected Examples of Recent Progress:

1. Federal-State Cooperative Program. By law, all meat and poultry produced, except that from exempted establishments, is required to be inspected by the Federal System or a state system at least equal to the Federal.

As of June 30, 1973, 40 States were certified as having meat inspection programs at least equal to the Federal program. Washington and Nevada relinquished their responsibility for meat and poultry inspection during FY 1973, for assumption of inspection by USDA. Other States and territories in which meat inspection responsibilities have been assumed by the Federal Government are North Dakota; Minnesota; Montana; Nebraska; Puerto Rico; the Virgin Islands; Guam; Kentucky; Pennsylvania; Oregon; and Missouri.

Thirty-one States were certified as having poultry inspection programs at least equal to Federal programs. The states and territories where the Federal Government has had to assume the responsibility for poultry inspection are Arkansas, Colorado, Georgia, Idaho, Kentucky, Maine, Michigan, Missouri, Montana, Nebraska, Nevada, North Dakota, Oregon, Pennsylvania, South Dakota, Utah, Washington, West Virginia, Minnesota, Puerto Rico, the Virgin Islands, and Guam.

Approximately 244 meat and poultry slaughter and processing plants have Federal inspection under 38 cooperative agreements (25 for meat inspection, 13 for poultry inspection) which permit the use of State employees through authority of the Talmadge-Aiken Act.

Four additional States entered into cooperative agreements for the regulation of allied industries (wholesalers, shippers, warehouses, animal food manufacturers, etc.) An agreement was cancelled in one State and the Federal Government assumed the inspection responsibility. The total number of States under these agreements is 35 plus the Virgin Islands.

Other special agreements with States permit the interchange of employees in five States and the cross-utilization of employees in 22 States.

A national residue monitoring program is being implemented that will include the States as an integral part of the total residue program. This will allow the States to conduct their testing programs on a more economical basis than would otherwise be possible.

Over \$29 million in grants for meat and poultry inspection were provided to the States in FY 1973. In addition, the Federal system provided training for many State employees in basic inspection laboratory techniques, and program review and compliance work. Federal reviewers conducted over 10,000 in-plant reviews of State plants to determine if State programs were being maintained equal to the requirements of the Federal Meat and Poultry Inspection Acts.

2. Systematic Review of Inspection Effectiveness. The effectiveness of the inspection program was evaluated through 718 on-site reviews of federally inspected plants under an evolving program of systematic plant review and followup. Review results were reported to field managers for immediate correction of weaknesses and to headquarters managers for long-range improvements.
3. Allied Industries. During fiscal year 1973, there were 33,342 reviews of the operations of "allied industries," such as wholesalers, shippers, warehouses, and animal food manufacturers. A total of 767 violations of the meat and poultry acts were noted, and 15,212,542 pounds of products were detained in 653 actions. Products are detained until they are (1) rendered suitable, (2) voluntarily destroyed by the owner, or (3) seized for disposition by a Federal court.

4. Inspection of Foreign Products. Eight veterinary officers including one supervisor were serving in overseas assignments during FY 1973. There are now review officers stationed in Australia, New Zealand, Argentina, Denmark, Austria, Germany, and the Netherlands. In addition, eleven review officers are based in Washington and travel overseas as needed. Authorization has been received to transfer four of these men from Washington to El Salvador, Mexico, Canada, and Australia in the coming year. During FY 1973 over 3,110 comprehensive reviews were conducted in foreign meat and poultry plants which were authorized to ship to the United States about 2 billion pounds of meat products. The number of eligible foreign plants increased slightly during FY 1973 from 1,059 to 1,077. Specialized training of an additional 100 inspectors in import techniques was conducted. Testing and analyses of imported products remained at a level comparable to that applied to domestic products.
5. Inedible Meat Kept from Human Food Channels. During the early summer a positive program of cooperation between Federal and State compliance staffs was intensified to prevent diversions to human food channels of meat from dead, dying, diseased, and disabled animals (4-D). Blizzards, floods, and other disasters caused an unusually large supply of 4-D animals in various sections of the country. High meat prices made it increasingly attractive for unscrupulous persons to collect and attempt diversions of 4-D meat for human food purposes. While these conditions prevailed, an extra measure of control was deemed essential to complement our regular programs to prevent the diversion of inedible meat. Therefore, a closely knit surveillance program was established in cooperation with State compliance programs and the Office of the Inspector General.

As a result of our combined efforts, many cases of possible diversions of 4-D meat were prevented. One such case of record involved two employees of a New York State meat processor who were brought to justice after they were caught attempting to divert 4-D meat to human food channels. This action came after several hours of surveillance activities involving New York State officials, Federal compliance officers, and Federal inspection personnel.

6. Nitrites and Nitrosamines. Considerable controversy has arisen over the use of nitrites in food production. Research indicated that nitrites may combine with secondary amines to form nitrosamines which are carcinogenic. In addition to its effect on flavor and color, the presence of nitrites in cured products controls the growth of the food poisoning organism Clostridium botulinum. Because of this vital safety factor and the absence of evidence that the regulated use of nitrites in the curing process is hazardous, USDA has not banned the use of this substance. However, in order to eliminate one possibility for nitrosamines entering food products, a prohibition was placed on the use of premixed seasonings and curing agents in processed meats and poultry products.
7. Labeling. Progress was made in developing new guidelines and regulations to provide for uniform label declarations of like products, the use of vegetable protein and to assure that meat and poultry products are in compliance with label statements. Concurrently, the meat and poultry industry has entered into voluntary programs of nutrition labeling and percentage labeling. Laboratory services has devoted considerable time toward developing analytical techniques used to verify nutrition claims.

During CY 1973, the volume of labels processed was approximately 180,000. On January 1, 1974, revised labeling and compositional standards for cooked sausages became effective and should aid consumers in differentiating between various sausages and competing meat products.

8. Inspection Procedures and Diagnostic Applications. Inspection procedures to detect Cysticercus bovis cysts were revised and should give further assurance that cattle carcasses are free of this tapeworm parasite.

Two new disease diagnostic systems are in stages of final development. One system can inexpensively and accurately test for trichinosis in swine; the other, with the use of a miniaturized electronic device, can detect certain parasitic, viral, and bacterial infections in various food animals.

In the poultry area, a statistical program for the carcass reinspection of ready-to-cook poultry was developed and tested. The program which includes reinspection of all classes of poultry and poultry giblets will insure greater uniformity and increase the quality of ready-to-cook poultry.

9. Microbiological Activities. In recognizing the general Salmonella issue, a task force was established to review inspection and processing procedures that may affect the microbiological quality of meat and poultry products. Priorities have been developed for implementation of changes or improvement in operating practices.

In the slaughter area, bacterial growth may develop on the surface of dressed carcasses in spite of rigid sanitary dressing procedures. To control this contamination the development of carcass chlorination procedures has been encouraged. To date, 22 such procedures have been approved.

A revised guidebook on microbiological analytical methods has been prepared. The guidebook which is used by Federal, State, Municipal, and commercial laboratories will update methodology and promote uniformity among the analytical laboratories.

10. New Procedures for Product Control. As a result of the success of plant operated quality control programs in specific areas, such as fat content in cooked sausages, new regulations were promulgated allowing a plant to voluntarily submit a quality control program to cover all phases of its operations. As knowledge of a plant's processing controls and product compliance are valuable adjuncts to inspection, this concept will play an ever-increasing role in future regulatory inspection.

Also published was a proposal to revise the net weight regulatory procedures so that State and local agencies could employ an inspection program on product after it leaves the Federal establishment which would be compatible with the inplant program.

11. Laboratory Activities. The Agency laboratories provide for the analysis and monitoring of chemical and biological substances in meat and poultry. Ingredients of processed meat and poultry foods, curing agents, bacterial levels, heavy metals, pesticide residues, growth-inducing hormones, and antibiotics are monitored to control their entry into the meat food supply. While improved sampling methodology has reduced the number of samples analyzed, the workload is constantly increasing as new additives are introduced into foods by feed manufacturers, livestock producers, handlers, and processors, which require more elaborate analytical techniques.

A National Residue Laboratory was established at Peoria, Illinois, during CY 1973. It is housed in an Agricultural Research Service facility. This laboratory will handle all objective residue samples in a more efficient and effective manner because of the optimum use of sophisticated equipment and personnel expertise.

APHIS's first multi-disciplinary laboratory, located at San Francisco, California, became fully operational during CY 1973. The laboratory possesses analytical capability to analyze food samples for microbiology, pathology, and chemistry. APHIS plans call for having a total of three such laboratories. During the early part of CY 1974 the second such laboratory is scheduled to open at Athens, Georgia, in the Richard B. Russell Agricultural Research Center.

In the residue area, considerable laboratory manpower was devoted toward environmental and accidental contamination of meat and poultry foods. Notable examples were: (a) Hexachlorobenzene (HCB) was found in some Louisiana cattle at unacceptable levels as a result of a waste disposal problem in the petrochemical industry. Corrective action was effected by a cooperative effort among Federal, State, Industry representatives, and farmers. (b) An insecticide, chlordane, was found in tissue of poultry in North Carolina and the cause was identified as a contaminated feed ingredient. (c) Toxic industrial chemicals, polychlorinated biphenyls, were found in poultry tissues from certain areas in Missouri. The source of these chemicals was not identified.

Approximately 6,000 samples were analyzed for the presence of diethylstilbestrol (DES) residues in FY 1973. During the year, approval for the use of DES was rescinded by FDA. Prior to that action, detection of DES in cattle liver remained at a constant rate of approximately 2%. Once use of DES was discontinued, the incidence dropped to approximately 0.5% in the last half of CY 1973.

A radiometric counter has been acquired to enable APHIS laboratories to develop and apply new methods for the detection of unwanted substances in food. Initially the instrument will be used to adapt radioimmunoassay procedures to the detection of staphylococcal enterotoxin in food.

An entomology section has been established to measure the presence in foods of extraneous filth such as insect parts and rodent hairs. Spices are being analyzed to determine overall quality of ingredients now in use and with a view toward establishing guidelines in this area with respect to spice quality.

During the monitoring of meat tissues for antibiotics, many samples were tested and found to inhibit microbial growth, but specific antibiotics could not be identified. Refinement of analytical techniques has since permitted the identification of many of these and the problem appears to be almost wholly solved. In FY 1973, 4,919 cases were analyzed for antibiotic residues compared to 2,539 cases in FY 1972, an increase of 94%.

Federal-State Relations: In order to provide added laboratory support to MPI programs, and develop closer relations with the States' programs, effort was directed toward involving more State laboratories in our work. Idaho, California, Illinois, and Kentucky now participate in State-Federal cooperative laboratory programs. In the latter part of 1973, an agreement was signed with the State of New York for some special analytical work. Several other States have also expressed an interest in these programs.

Geographic Distribution of Obligations:

<u>Meat and Poultry Inspection</u>	1973 <u>Actual</u>	1974 <u>Estimate</u>	1975 <u>Estimate</u>
Alabama	4,846,493	5,590,000	5,624,000
Alaska	161,334	146,000	157,000
Arizona	655,714	675,000	761,000
Arkansas	5,589,585	6,220,000	6,486,000
California	9,739,167	10,157,000	11,301,000
Colorado	2,452,195	2,738,000	2,846,000
Connecticut	1,116,526	1,198,000	1,296,000
Delaware	1,583,123	1,728,000	1,837,000
D.C.	11,827,296	12,546,000	13,096,000
Florida	2,625,227	2,967,000	3,046,000
Georgia	7,659,164	8,482,000	8,803,000
Hawaii	523,000	585,000	607,000
Idaho	771,974	826,000	896,000
Illinois	6,969,263	7,896,000	8,086,000
Indiana	3,001,565	3,199,000	3,483,000
Iowa	8,302,737	8,942,000	9,634,000
Kansas	3,370,704	3,793,000	3,911,000
Kentucky	1,746,974	1,959,000	2,027,000
Louisiana	1,760,536	1,912,000	2,042,000
Maine	678,985	713,000	788,000
Maryland	5,817,595	6,160,000	6,751,000
Massachusetts	2,221,874	2,474,000	2,694,000
Michigan	2,824,809	3,030,000	3,278,000
Minnesota	5,877,654	6,539,000	6,820,000
Mississippi	1,875,199	1,977,000	2,176,000
Missouri	5,872,640	6,600,000	6,815,000
Montana	494,202	539,000	573,000

Meat and Poultry Inspection - Cont'd

	1973 <u>Actual</u>	1974 <u>Estimate</u>	1975 <u>Estimate</u>
Nebraska	4,830,393	5,433,000	5,605,000
Nevada	123,022	129,000	143,000
New Hampshire	359,918	383,000	418,000
New Jersey	2,672,001	3,111,000	3,249,000
New Mexico	694,796	727,000	806,000
New York	7,840,864	8,707,000	9,099,000
North Carolina	5,109,107	5,760,000	5,929,000
North Dakota	553,490	581,000	642,000
Ohio	4,549,742	5,088,000	5,280,000
Oklahoma	1,848,187	1,980,000	2,144,000
Oregon	2,157,443	2,448,000	2,503,000
Pennsylvania	9,777,213	11,158,000	11,345,000
Rhode Island	371,294	454,000	470,000
South Carolina	1,819,471	1,983,000	2,111,000
South Dakota	1,147,009	1,230,000	1,331,000
Tennessee	2,814,384	3,145,000	3,266,000
Texas	9,887,201	11,314,000	11,473,000
Utah	647,824	747,000	752,000
Vermont	240,698	320,000	339,000
Virginia	3,290,106	3,515,000	3,818,000
Washington	1,577,185	1,742,000	1,830,000
West Virginia	644,146	684,000	747,000
Wisconsin	3,462,860	3,942,000	4,018,000
Wyoming	51,525	250,000	265,000
Puerto Rico	994,846	1,149,000	1,154,000
Virgin Islands	44,782	46,000	52,000
Guam	25,398	30,200	35,200
Foreign Countries	232,730	255,000	450,000
Total	168,133,170	185,902,200	195,108,200

PLANT DISEASE AND PEST CONTROL

Selected Examples of Recent Progress:

Plant Protection

1. Pilot Boll Weevil Eradication Experiment. The pilot boll weevil eradication experiment in Mississippi, Louisiana, and Alabama was terminated August 10, 1973.

Favorable results were achieved by integrating a series of suppression practices over a period of 2 years. These included diapause chemical control along with cultural practices, use of lure traps, trap crops baited with a pheromone lure and treated with a systemic insecticide, and the use of sterile weevils.

Intensified surveys were carried out during the final stages of the test. The key to proving eradication was our ability to detect these infestations in the incipient stage, eliminate them promptly, and prevent weevil reproduction.

The most promising technique which evolved from this experiment is the trap plot baited with pheromone. This technique offers a practical control tool for farmer use with real ecological benefits. It appears that 1 to 3 percent of the cotton acreage may be treated in the trap plots and thereby achieve in excess of 90 percent reduction in the overwintering population of boll weevils.

Results of the experiment have stimulated great interest in cotton producing areas in the feasibility of a boll weevil elimination program.

2. Boll Weevil--Texas High Plains. The boll weevil diapause control program on the Texas High Plains has been effective in preventing westward spread of the pest to uninfested areas of west Texas and to Arizona, California, and New Mexico. Control work in the Big Bend area of Texas along the Texas-Mexico border also has been effective in preventing buildup and spread from that area. A total of 550,000 aggregate acres was treated in 1972, as compared with an estimated 658,279 acres for 1973.

Treatment on an "as needed" basis was expanded to the entire control zone in 1972 and was continued in 1973. Weekly surveys identify cotton fields requiring control. The use of the systemic insecticide, Aldicarb, in trap crops near hibernation sites was expanded this year. These newer pest management concepts are improving the economy and effectiveness of the overall control effort. A large-scale field test is proposed for the Texas High Plains in the spring of 1974 to integrate certain proven techniques of the Mississippi eradication trial into program operations.

3. Cereal Leaf Beetle. The Federal cereal leaf beetle quarantine was terminated October 1, 1973. Letters received and statements presented at a public hearing held at Indianapolis, Indiana, August 7, generally favored termination of the quarantine with continued Federal involvement with other phases of the program. This includes an integrated management approach, keyed to advisory surveys and release of parasites in newly infested areas.

Rearing, colonizing, and releasing of parasites is now a major component of the cereal leaf beetle program. One species, Anaphes flavipes, an egg parasite, is being mass reared in the Niles, Michigan, laboratory and released throughout the infested States. The egg parasite has been recovered from 59 counties in Indiana, Michigan, New York, Ohio, Pennsylvania, and West Virginia. Three larval parasites, Tetrastichus julis, Diaparsis spp., and Lemophagus curtus, are being mass produced in field insectaries and released. One or more of the larval parasites have been established in Indiana, Michigan, Ohio, Pennsylvania, and West Virginia.

4. Citrus Blackfly. An intensive biometrically designed survey completed in June 1973, revealed 14 infestations in seven towns in Cameron County, Texas, and three infestations in three towns in the State of Tamaulipas, Mexico. These positive finds were individual trees or small infestations which did not link up. Contiguous infestations exist in the twin cities of Brownsville, Texas, and Matamoros, Tamaulipas, Mexico.

A tree by tree inspection and a biometric survey of the city of Mission following completion of treatments has failed to reveal infestation. All known infestations in Texas are in Cameron County. Scattered infestations occur from a point approximately 8 miles southeast of the city of San Benito to about 3 miles southeast of Brownsville including the city of Brownsville.

In Mexico, scattered dooryard infestations exist in the southern and eastern portions of Matamoros and 5 miles to the east in close proximity to the Rio Grande River.

Individual infested trees are being treated as found. Parasites are used to overflood untreated infestations. Infrared photography is used to map groves, locate suspect areas, and detect infestations. In cooperation with the Agricultural Research Service, pesticide screening tests are underway in General Teran, Nuevo Leon, Mexico.

A public hearing to propose a Federal quarantine because of the citrus blackfly in Texas was held October 30, 1973, in San Antonio. From the testimony submitted and comments received, it has been decided that a Federal quarantine will be promulgated. Only portions of Cameron County, Texas, where infestations are known to occur will be regulated. Fruit can continue to be safely shipped from the regulated area. When the quarantine

becomes effective, the emergency regulations that have been in effect on citrus blackfly will be terminated. (See Exhibit 1 for a map depicting susceptible citrus growing areas and areas where control measures are being applied.)

5. Imported Fire Ant. Requests from cooperators for imported fire ant control assistance continue to increase, especially in Texas, Louisiana, and South Carolina. These States have increased their level of funding available for imported fire ant control.

In the spring of 1973 about 4 million acres were treated in Alabama, Georgia, and Louisiana. About 10.6 million acres were treated in the fall of 1973 in Alabama, Georgia, Louisiana, Mississippi, South Carolina, and Texas.

The Environmental Protection Agency is holding a public hearing to determine whether or not the registrations of mirex should be cancelled or amended. The search for alternate chemical controls continues. At present, diazinon shows some promise. Small-scale tests are underway.

Monitoring the environment for mirex residues continues as an integral part of the imported fire ant program. Environmental components consisting of soil, vegetation, water, sediment, fish, crustaceans, birds, mammals, and terrestrial insects were collected from approximately 300 representative sites following the spring control program. Another 600 sites are being sampled within the fall treatment area.

Early in 1973, automated gas chromatographs were installed at the Environmental Quality Laboratory in Gulfport, Mississippi, to facilitate pesticide residue analysis of the thousands of samples collected in the monitoring program. These instruments, operating 24 hours a day, are computer controlled and are capable of analyzing 1,000 samples in a 2-week period as opposed to several months required with manually operated gas chromatographs.

In addition to monitoring activities, a study was conducted to determine the effectiveness of the imported fire ant treatment. A preliminary evaluation of the efficacy results indicates better than 90 percent control 60 days following treatment. About 98 percent control was achieved 150 days following treatment.

6. Golden Nematode. The objective of eradication of golden nematode from host cropland in the United States by 1980 still appears promising. The nationwide biometrical survey has failed to show any field infestation outside of Long Island, New York. It is expected that a considerable boost will be given to eradication in 1974, when the nematode resistant potato variety, Hudson, is released for commercial planting and a systemic nematocide is registered for use on potatoes. A vacuum soil sampler is expected to be in full field use in 1974. This will improve our capability in detecting light infestations of this microscopic pest.

During fiscal year 1973, 347 acres were found infested on Long Island. All of this acreage is scheduled for treatment with a soil fumigant, 307 acres having been treated by December.

7. Grasshopper Control. Grasshopper populations again built up to serious levels in Idaho, New Mexico, and Washington, with lesser problems in Colorado and Wyoming during 1973. A total of 2.8 million acres required suppressive treatments in nine States (See Exhibit 2). Malathion was the principal insecticide used in most areas; however, carbaryl was applied on approximately 246,000 acres in New Mexico for control of grasshoppers and range caterpillars. Excellent control was obtained in all cases.
8. Gypsy Moth. About 63,000 disparlure-baited traps were placed in 42 States

in 1973. Male moths were trapped in 67 new counties in 15 States for the first time. Many of these catches involved single moths and were apparently brought to the sites in recreational vehicles. The Federal-State survey was assisted by a volunteer effort of the National Campers and Hikers Association. Members of this group set and tended traps in several states.

Insecticides were aerially applied to isolated infestations in Michigan and Ohio found on 13,360 and 336 acres, respectively. The Ohio outbreak was successfully contained; however, surveys in Michigan found moths in parts of 18 counties. The Michigan situation will receive priority control attention as will two spot infestations in North Carolina and Virginia

Microencapsulated formulations of disparlure were field tested in various areas. In all instances the material was aerially applied. The objective is to determine if male moths can be confused over a long enough period of time to significantly inhibit mating. A preliminary report indicates this control technique may be practical with light infestations.

The New Jersey and Maryland Departments of Agriculture are under cooperative agreements with APHIS to mass rear certain parasites for the release at suspect sites in the noninfested area. During 1973, the New Jersey facility produced 270,400 parasites (eight species) for release in Delaware, Maryland, North Carolina, Pennsylvania, Virginia, and Wisconsin. The Maryland facility produced about 45,000 parasites (two species) for release within the State.

9. Pest Management. In 1973, the total number of cooperative pest management projects was increased from 22 to 39. In addition to expansion within the ongoing projects on cotton, apples, beans, peppers, tobacco, sweet corn, lettuce, alfalfa, and potatoes, new projects were initiated on pears, alfalfa seed, peanuts, grain sorghum, citrus, and field corn (See Exhibit 3). The interest in pest management continues to grow at a rapid rate.

Another positive aspect of the 1973 pest management effort was a reduction in the number of pesticide applications in many instances. With information available on pest population levels, participating growers are delaying pesticide applications until economic levels of pests are determined. This, in itself, is saving two to three applications of pesticides by the growers and keeping that much additional pesticides out of the environment. This also provides for better utilization of beneficial species in the fields. Predictive biological models are also being brought to play in some of the projects and are showing real promise.

A national data collection format for the cotton projects has been finalized and is being used as a guide for setting up data collection formats in other projects. It is envisioned that in the future these data can be used to forecast insect pest outbreaks.

10. Pink Bollworm. The sterile moth technique to prevent establishment of pink bollworm populations of economic importance in the San Joaquin Valley of California continues to be successful. Ninety million sterile moths were released by aircraft in this area between mid-May and mid-November. The program is supported by an intensive survey using 50,000 traps baited with a synthetic lure. Twenty-five native moths were trapped in the Valley compared with 36 in 1972. No larvae were found in followup field surveys.

Significant improvements have been made in the mass rearing of pink bollworm moths. New techniques are being incorporated into an additional rearing facility established at Brownsville, Texas. Sterile moths from this laboratory will be used for release in Florida wild cotton. Suppression of

pink bollworm populations in the Florida Keys protects the noninfested cotton of the Southeast.

Agricultural Quarantine Inspection

1. More Stringent Import Regulations for Animal Byproduct. Progress in the United States toward eradication of hog cholera and exotic Newcastle disease of poultry have necessitated more stringent import regulations. More intensive inspection of ships, aircraft and baggage at ports of entry resulted in an increase in the seizure of prohibited animal byproducts.

Agricultural Quarantine personnel have been supervising the inspection of northern bound U.S. flights departing Puerto Rico, where exotic Newcastle disease occurs, in order to prevent the spread of the disease to the mainland through birds, poultry, and eggs.

2. Plant Pests of Quarantine Significance Frequently Intercepted. Most significant plant pests are intercepted with unauthorized plant materials or found hitchhiking aboard carriers or with general cargoes. Some of the more significant plant pests found include the following: Woodborers (766 times), citrus blackspot (403), citrus canker (365), Mexican fruit fly (363), Japanese citrus scales (310), rice disease (236), Mediterranean fruit fly (150) and khapra beetle (110).
3. Preclearance of Agriculture Products. This program has been expanded to include the clearance of pears in Italy, grapes in Spain, grapes and plums in Chile, and mangoes in Mexico. Under cooperative agreement between foreign exporters and APHIS, PPQ representatives inspect and/or supervise the treatment of various commodities to meet U.S. entry requirements. This service is at the request and expense of the exporters and provides benefits to American agriculture by eliminating the pest at the source.
4. Cross-Utilization of Other APHIS Personnel. The cross-utilization of other APHIS inspectors to perform AQI inspections is being accomplished at 42 locations throughout the United States. PPQ domestic program inspectors and Veterinary Services personnel are inspecting foreign arrivals of aircraft, ships, and cargo, as well as performing phytosanitary export certification of U.S. agriculture products. A newly prepared cross-utilization manual has been distributed to these inspectors and additional training continues as necessary.
5. Increased Coordination with Military in Clearance of Military Movements. Because of the increased concern for military movements back to the U.S. which may contribute to the risk of introducing plant and animal pests, the Department of Defense has formally included APHIS in preclearance arrangements. The military has also agreed to amend DOD Regulation 5030.49R, the inspection manual and guideline for overseas inspection of military goods and carriers, to include all agricultural quarantine requirements in the appropriate sections.

By instructing military personnel to recognize the necessity of not returning prohibited animal and plant products and the necessity of shipping only clean cargo, the workload and cost of clearance at point of entry have been greatly reduced.

Geographic Distribution of Obligations:

Plant Protection

	1973 <u>Actual</u>	1974 <u>Estimate</u>	1975 <u>Estimate</u>
Alabama	1,798,573	692,000	713,600
Arizona	711,398	628,200	676,500

Plant Protection - Cont'd

	1973	1974	1975
	<u>Actual</u>	<u>Estimate</u>	<u>Estimate</u>
Arkansas	134,849	155,600	164,400
California	612,939	742,200	795,200
Colorado	63,163	70,600	81,000
Connecticut	137,080	174,500	184,300
Delaware	80,511	64,100	64,400
District of Columbia	650,159	1,173,400	1,205,700
Florida	997,819	868,100	898,400
Georgia	2,328,738	1,539,000	1,567,400
Hawaii	44,411	17,500	17,800
Idaho	798,587	391,400	391,600
Illinois	195,997	220,400	224,900
Indiana	104,345	152,700	154,600
Iowa	125,136	175,800	180,600
Kansas	23,304	37,700	38,000
Kentucky	51,794	9,500	9,900
Louisiana	742,430	693,200	725,700
Maine	88,246	108,800	116,500
Maryland	2,102,849	2,737,700	2,914,900
Massachusetts	139,881	243,700	253,800
Michigan	700,033	801,000	844,700
Minnesota	374,403	524,400	535,100
Mississippi	2,560,897	2,488,500	2,622,200
Missouri	57,099	60,900	61,100
Montana	73,296	82,900	85,700
Nebraska	44,563	41,600	42,000
Nevada	54,397	59,100	59,500
New Hampshire	74,540	138,200	146,000
New Jersey	524,278	658,000	707,300
New Mexico	129,170	172,300	180,800
New York	847,310	713,600	742,300
North Carolina	2,001,614	2,171,000	2,210,800
North Dakota	8,218	10,400	10,600
Ohio	205,943	245,400	252,900
Oklahoma	117,743	155,700	162,000
Oregon	187,322	32,800	33,000
Pennsylvania	605,212	535,100	544,500
Rhode Island	40,628	50,500	57,500
South Carolina	647,854	697,900	703,400
South Dakota	38,516	43,600	46,500
Tennessee	270,712	224,400	241,700
Texas	1,597,572	3,298,400	3,391,300
Utah	13,987	43,100	46,200
Vermont	54,039	62,300	65,700
Virginia	397,034	325,500	348,700
Washington	807,586	319,600	323,000
West Virginia	118,881	80,800	86,700
Wisconsin	41,184	75,400	76,000
Wyoming	34,916	94,500	96,700
Mexico	1,418,123	774,300	788,200
Total	25,979,279	25,877,300	26,891,300

Agricultural Quarantine Inspection

	1973	1974	1975
	<u>Actual</u>	<u>Estimate</u>	<u>Estimate</u>
Alabama	122,651	154,700	164,800
Alaska	89,446	94,400	96,300
Arizona	385,660	414,800	457,700
California	2,123,447	2,079,400	2,232,900
Delaware	89,577	93,900	96,700

Agricultural Quarantine Inspection-Cont'd

	1973 <u>Actual</u>	1974 <u>Estimate</u>	1975 <u>Estimate</u>
District of Columbia	535,386	732,000	757,900
Florida	1,321,335	1,598,000	1,664,100
Georgia	99,369	105,500	111,200
Hawaii	1,389,834	1,639,900	1,676,500
Illinois	158,481	182,800	194,800
Louisiana	541,479	617,100	649,500
Maine	54,470	56,200	58,300
Maryland	1,275,279	2,802,700	2,872,600
Massachusetts	262,049	292,300	307,300
Michigan	191,385	143,600	156,800
Minnesota	187,218	277,300	284,800
Mississippi	741,213	640,400	642,200
New Jersey	1,497,516	939,600	943,900
New York	1,871,371	2,131,600	2,241,800
North Carolina	53,896	58,800	63,300
Ohio	66,567	71,800	86,900
Oregon	114,686	118,900	134,200
Pennsylvania	189,143	211,000	228,900
Rhode Island	36,039	41,000	45,100
South Carolina	162,426	182,900	193,400
Tennessee	20,062	-	-
Texas	2,999,850	3,259,700	3,397,400
Virginia	291,420	344,000	352,500
Washington	236,081	268,400	293,900
Wisconsin	33,171	39,100	43,700
Puerto Rico	575,830	680,300	693,000
Virgin Islands	94,424	100,900	104,800
Other foreign countries	141,057	67,500	78,300
Total	17,951,818	20,440,500	21,325,500

Animal Disease and Pest Control

Selected Examples of Recent Progress:

Animal Health

1. Exotic Newcastle Disease. During FY 1973, significant progress was made in the eradication of exotic Newcastle disease from the continental United States. As of the beginning of FY 1973, 45,000 square miles in southern California, approximately 17,000 square miles in western Arizona, and portions of Dade and Broward Counties, Florida, were under State and Federal quarantines. The outbreaks in Florida and Arizona were quickly eliminated, and the incidence of the disease in southern California was greatly reduced. The last case in California occurred on June 28, 1973, in a turkey flock in Riverside County.

Intensive surveillance activities will be continued in southern California for 9 months following the release of the last quarantine to ensure that the disease has been eradicated.

On January 23, 1973, a small unrelated outbreak of exotic Newcastle disease was confirmed in a backyard-type flock in Los Ebanos, Hidalgo County, Texas. This outbreak was quickly eliminated. On September 24, 1973, exotic Newcastle disease was diagnosed in baby chicks from a farm near Adams, Tennessee, and from a parrot purchased at a Nashville, Tennessee, pet shop. These outbreaks, apparently introduced from outside the U.S., were eliminated without spread.

There are currently no Federal quarantines in the continental United States because of exotic Newcastle disease. Puerto Rico remains under quarantine. Three regional poultry epidemiologists and 30 veterinarians with poultry disease diagnostic training have been organized into a team to stimulate poultry disease reporting and to maintain an alert system for the detection of exotic Newcastle disease. The primary breeder flocks are being given special consideration to develop control programs to protect valuable genetic stock. Imported pet birds are included in the surveillance.

2. Hog Cholera. During FY 1973, 163 positive cases of hog cholera were reported in 18 States and Puerto Rico, this represented more than a 100% increase over the 76 cases reported in FY 1972.

Faced with rapidly spreading hog cholera outbreaks during early months of the fiscal year, the Secretary of Agriculture, on October 11, 1972, declared the existence of a national emergency.

On October 11, 1972, because certain States were experiencing difficulties in obtaining funds for hog cholera indemnities with which to cooperate in prompt elimination of infection, the Federal share of indemnities was increased to 75 percent. A hog cholera coordinator and one diagnostician were assigned the responsibility for surveillance and investigation in each State until eradication of the disease is completed. This action was taken to combat a decline in the reporting of suspicious cases and to maintain surveillance of swine movements and marketing practices. Increased emphasis was placed on locating and inspecting premises feeding food waste to swine. Special teams inspected all licensed food waste feeding establishments in nine States.

Incidence of hog cholera was reduced drastically during the last six months of FY 1973 when only 16 positive cases were reported. No cases have been reported during the first six months of FY 1974.

As of January 1, 1974, 47 states were in hog cholera-free status and 3 states and Puerto Rico were in the final eradication phase (Phase IV). (See Exhibit 4).

3. Cattle Fever Ticks. The serious outbreak of cattle fever ticks which occurred in south Texas outside the quarantine zone early in FY 1972 has been brought under control. The ability of the tick to survive on infested pastures for long periods of time and the consequent necessity to dip infested and exposed herds at frequent intervals for periods as long as one year make final eradication a lengthy process. State and Federal quarantines were placed on parts of seven counties and all cattle in these areas are inspected and dipped before movement from the areas. The spread of the ticks was stopped and eradication of the infestations is underway.

Additional infestations occurred during FY 1973 in an area adjacent to the quarantine zone which required an enlargement of the zone along the Rio Grande River. This quarantined area is composed of parts of four counties.

Infestations increased from 61 in FY 1972 to 170 in FY 1973. The number of cattle dipped in connection with the tick eradication program increased from 153,037 in FY 1972 to 390,738 in FY 1973.

Organophosphorous dips are being used extensively instead of the arsenical dips used in the past. Whereas arsenical dips are effective for only two weeks, the organophosphorous dips are effective for up to three weeks, thus reducing the frequency of dipping. In addition, the organophosphorous dips are more effective against a broad spectrum of ectoparasites and

eliminate the problem of arsenical burns on cattle.

4. Sheep Scabies. Sheep scabies has been eradicated from the United States. When the accelerated sheep scabies eradication program was initiated in 1960, 22 States were considered infected. The last outbreak occurred in January, 1970, and after a three year period of surveillance, the United States was declared free of psoroptic sheep scabies in January 1973.
5. Screwworm Eradication. Following unusually favorable weather for the multiplication of screwworms in 1971-1972, extensive outbreaks occurred in the spring, summer and fall of 1972. These were only brought under control by raising the production and distribution of sterile screwworm flies to full capacity at the Mission, Texas fly raising facility, by maintaining full production during the past winter, and by the arrival of cold weather in much of the infested area outside of the barrier zone. A weekly average of almost 200 million sterile flies were produced and released over infested areas in the United States and Mexico.

Climatic conditions over the past few years have been extremely favorable to the development of screwworms. To prevent a recurrence of the 1972 outbreak, full production has been continued through the first half of FY 1974. While screwworm cases were held to a "liveable" level in 1973, the number of laboratory-confirmed cases was the third highest reported since the program began.

The cooperative U.S.-Mexico program to move the barrier zone south to the Isthmus of Tehuantepec was started in FY 1973 with the establishment of the Joint Commission in Mexico City. A site for the sterile fly production plant has been acquired near Tuxtla Gutierrez, Chiapas, Mexico, and an architectural-engineering contract has been awarded to plan the facility. Full production of 300 million sterile flies per week at this facility is projected for May 1975.

Screwworms were eradicated from the British and U.S. Virgin Islands during fiscal year 1973.

6. Brucellosis Eradication. Brucellosis surveillance under the market cattle identification program continued an upward trend during fiscal year 1973. The number of animals tested under this program increased to 8,460,300 as compared to 7,266,150 in fiscal year 1972. This represents an increase of 16%. (See Exhibit 5 for map showing current status)

Eradication of the disease from swine has registered substantial gains in every measureable activity: validated areas increased from 201 to 350 since the start of the calendar year for a 74% gain; the number of validated herds increased by 30% from 2945 to 3819; and the total swine tested in the first eight months of CY 1973 was four times greater than the total for the entire preceding year. (995,684 vs. 246,570)

Nine States have been added to the six that were engaged in Swine Brucellosis Eradication at the end of FY 1973, and two States were recently validated as free of swine brucellosis bringing to seven the number that have qualified for this status.

Swine blood samples are now being collected at 19 slaughter plants in seven States, an increase of 11 plants and three States during the calendar year.

7. Tuberculosis Eradication. The comparative-cervical tuberculin test has been accepted as an official retest procedure for clarifying the status of tuberculin suspect cattle in herds not known to be affected with bovine tuberculosis. Veterinarians in 28 States have been trained to conduct this test procedure which will be able to detect bovine tuberculosis in cattle herds sooner and thus accelerate the goal of eradication of bovine

tuberculosis from the United States. At the same time, the test will also avoid the destruction of most animals with false positive tuberculin test results in herds free of bovine tuberculosis, thus making more indemnity funds available for destruction of diseased and exposed animals.

The complete depopulation of 17 of 38 (44.7 percent) lesion herds was accomplished during FY 1973. These herds are the main sources of tuberculosis spread in the United States, and their depopulation is a major step toward eradication of bovine tuberculosis. A total of 9,140 potentially dangerous tuberculosis-exposed animals was depopulated.

8. Surveillance for Venezuelan Equine Encephalitis. During calendar year 1972, 1,068 investigations were made of suspected equine encephalitis cases. Of this number, 452 were positive for western equine encephalitis (WEE), and 32 were positive for eastern equine encephalitis (EEE), with no cases of Venezuelanequine encephalitis (VEE). In other surveillance activities, 1,241,207, mosquitoes were collected. There was no indication of epidemic VEE viral activity in the United States from this surveillance.

During calendar year 1973, the Department cooperated closely with Mexico in surveillance of the disease in equidae, mosquitoes, and small mammals. In the United States, the most important part of VEE surveillance continued to be the prompt investigation of all suspicious cases of equine encephalitis. Laboratory tests were used to determine whether the virus was eastern, western or Venezuelan equine encephalitis. WEE was diagnosed in 19 States and EEE in 20 States. There were no positive cases of VEE. In addition, mosquito collections were made routinely along the entire Mexican border from Brownsville, Texas to San Ysidro, California. Only WEE virus was isolated from mosquitoes. Surveillance activities of the last two years have revealed no sign of the VEE virus in the United States.

9. Identification of Market Animals for Disease Surveillance. In fiscal year 1972, 11,995 specific contacts were made with markets and slaughtering establishments to supervise and coordinate the operation of the market cattle identification (MCI) program. In fiscal year 1973, 21,212 contacts were made. Measurable results of these contacts were 21.6 million cattle backtagged and 8.5 million blood samples collected during FY 1973. This is an increase over FY 1972 of 1.1 million cattle backtagged and 1.2 million blood samples collected.
10. Import-Export Inspection of Animals. Over 1.3 million animals and 3.5 million poultry were imported during FY 1973. Safeguards to prevent the introduction of exotic diseases were applied when these animals were offered for entry. New bloodlines continued to be introduced in 1973 through importation, under stringent conditions, of bovine semen from countries infected with foot-and-mouth disease. Three projects were completed and one project was in progress for the importation of semen. Exotic breeds of cattle were imported from Eleuthera (Bahamas), Ireland, Japan, New Zealand, Canada, Norway and Sweden. Import regulations were amended to provide for the import of personally owned pet birds under safeguards to prevent the introduction of Newcastle disease of poultry.

The Department has reached agreement with several foreign governments on import health requirements for livestock from the United States. Included in this group of foreign countries are Australia (dogs from Hawaii), Bahamas (cattle), Belgium (horses), Bulgaria (cattle), Federal Republic of Germany (horses, dogs, and cats), France (cattle), Greece (cattle), Hungary (cattle), India (cattle), Spain (renegotiated cattle), Sweden

(horses), Taiwan (cattle). In FY 1973, 35,059 head of livestock were exported to overseas countries, an increase of 87% over FY 1972 (18,679).

11. Animal Welfare. Public Law 91-579, the Animal Welfare Act, amended Public Law 89-544 to bring under humane care and handling standards all warmblooded animals, as designated by the Secretary, used for purposes of research, or exhibition and offered for sale by commercial animal dealers as pets. This resulted in a substantial number of additional research facilities, dealers, and exhibitors becoming subject to regulation. During FY 1973, 2,815 dealers and 189 exhibitors were licensed, 336 exhibitors and 172 research facilities were registered and a total of 11,943 inspections were conducted to determine compliance with the Animal Welfare Act.
12. Horse Protection. Horse Protection enforcement results improved noticeably during FY 1973. Over 70,000 horses were inspected at 495 shows for compliance with the Horse Protection Act of 1970. Of the over 200 apparent violation cases prepared by December 1973, 68 are in the hands of U.S. attorneys for criminal prosecution and 22 civil stipulations have been prepared. To date, 8 criminal convictions for violations of the Act have been obtained and 2 civil penalty stipulations have been successfully completed. Penalties in the criminal cases have ranged from \$250 to \$1,000 plus one year's probation.

A thermovision machine has been used as an aid in detecting sore horses since late June 1973. During this time, over 1,500 horses have been screened by the thermovision at about a dozen horse shows, mainly in the southeast. Of these, approximately 50 sore horses were detected. This thermovision equipment has been a deterrent to the showing of sore horses and has significantly improved the Department's enforcement capability at shows when and where it is available by assisting USDA veterinarians in diagnosing the sore horse.

Veterinary Biologics

1. Regulatory Operations. Veterinary inspectors conducted nine indepth and 12 followup inspections of licensed establishments. Test laboratories operated by the Department at Ames, Iowa, performed check tests for purity and safety, or for efficacy, or both, on 6,439 serials of product manufactured under license. This resulted in rejection of 354 serials or approximately 242 million substandard doses. Nineteen field complaints were investigated. Of these 19 field complaints, seven were resolved without assistance from the biologics laboratory. Twelve cases were further tested by the laboratory with no significant findings. All samples were authenticated by Department personnel.
2. Improved Test Methods and Laboratory Procedures. A new method of evaluating virus vaccines by establishing the minimum effective dose of vaccine virus and testing each serial for virus content in each dose has been adapted to several vaccines, including those for rabies. A two-stage test for potency which permits retests under controlled conditions has been adapted to 10 types of bacterial products. Of eight new test proposals, five have been adopted in final form and issued.
3. Licensing Activities. During fiscal year 1973, the number of establishments licensed by the Department remained at 41 and two permittees.

At the close of fiscal year 1973, 733 product licenses and two import permits were in effect. During the year, 112 product licenses were terminated and 55 new product licenses were issued. Licensees presented for evaluation 55 applications for product licenses.

Licenses now in effect cover 208 generic products, manufactured in a total of approximately 15.6 billion doses. Licensed biologics prevent, detect, or treat 67 animal diseases.

Geographic Distribution of Obligations:

Animal Health

	1973 <u>Actual</u>	1974 <u>Estimate</u>	1975 <u>Estimate</u>
Alabama	862,588	973,900	1,001,900
Alaska	20,993	54,400	64,400
Arizona	492,118	332,900	366,900
Arkansas	1,156,175	978,400	1,008,400
California	825,372	1,223,800	1,275,800
Colorado	616,152	697,900	720,400
Connecticut	54,163	81,400	82,400
Delaware	45,306	34,300	34,800
District of Columbia	1,671,536	2,170,500	2,486,600
Florida	2,073,270	2,390,600	2,439,100
Georgia	987,665	996,300	1,030,300
Hawaii	189,122	200,600	219,600
Idaho	509,369	408,300	435,300
Illinois	905,119	854,800	884,200
Indiana	968,535	874,600	897,600
Iowa	3,510,583	3,434,400	3,505,600
Kansas	836,026	911,500	940,900
Kentucky	641,660	686,400	707,900
Louisiana	1,555,506	1,617,400	1,657,400
Maine	158,154	107,600	127,100
Maryland	5,664,850	8,402,800	9,206,700
Massachusetts	190,840	299,300	329,300
Michigan	502,342	462,900	471,400
Minnesota	1,234,148	1,530,700	1,656,700
Mississippi	1,967,693	2,006,600	2,038,600
Missouri	1,003,408	905,700	927,000
Montana	400,334	354,000	371,600
Nebraska	765,903	778,200	791,200
Nevada	159,859	174,100	180,100
New Hampshire	73,436	72,800	73,300
New Jersey	949,055	171,800	183,800
New Mexico	586,565	500,800	532,300
New York	607,003	596,900	620,900
North Carolina	616,212	724,000	732,500
North Dakota	351,233	368,800	399,800
Ohio	410,096	641,500	659,000
Oklahoma	1,980,995	2,071,800	2,107,400
Oregon	375,716	245,300	260,300
Pennsylvania	318,179	404,100	412,100
Rhode Island	38,904	51,900	52,200
South Carolina	500,614	806,800	817,800
South Dakota	557,064	443,800	462,800
Tennessee	1,525,732	1,666,100	1,700,100
Texas	15,603,930	11,585,900	11,712,800
Utah	380,694	359,200	385,700
Vermont	160,209	153,800	160,300
Virginia	382,678	373,000	375,500
Washington	369,585	350,500	366,500
West Virginia	235,780	277,700	279,500
Wisconsin	870,928	952,800	957,800
Wyoming	250,809	262,000	278,000
Puerto Rico	827,155	1,089,800	1,118,300
Virgin Islands	91,591	5,000	7,500

Animal Health-Cont'd

	1973 <u>Actual</u>	1974 <u>Estimate</u>	1975 <u>Estimate</u>
Foreign Countries:			
Mexico	2,065,781	6,730,200	10,155,200
Italy	118,675	54,100	54,100
El Salvador	79,244	43,700	43,700
Costa Rico	95,097	61,100	61,100
Panama	68,217	115,200	465,200
Colombia	- -	- -	1,350,000
Subtotal, Foreign Countries	2,427,014	7,004,300	12,129,300
Total	60,459,966	65,124,700	72,644,700 <u>a/</u>

a/ Does not include repayment to CCC, \$62,900,000 of funds transferred under the emergency authority of the Secretary (21 USC 129) to combat diseases which threatened the livestock and poultry industries of the country.

Veterinary Biologics

	1973 <u>Actual</u>	1974 <u>Estimate</u>	1975 <u>Estimate</u>
District of Columbia	105,495	156,100	167,300
Iowa	3,289,234	3,880,700	3,922,200
Maryland	528,080	591,200	656,800
Minnesota	34,067	50,300	53,000
Total	3,956,876	4,678,300	4,799,300

CONTINGENCY FUND

The releases from the Contingency Fund for control of pests and other emergency outbreaks of insects, plant diseases, and animal diseases are shown below. At least \$1 million of the \$1.5 million fund is reserved for plant and related insect pests.

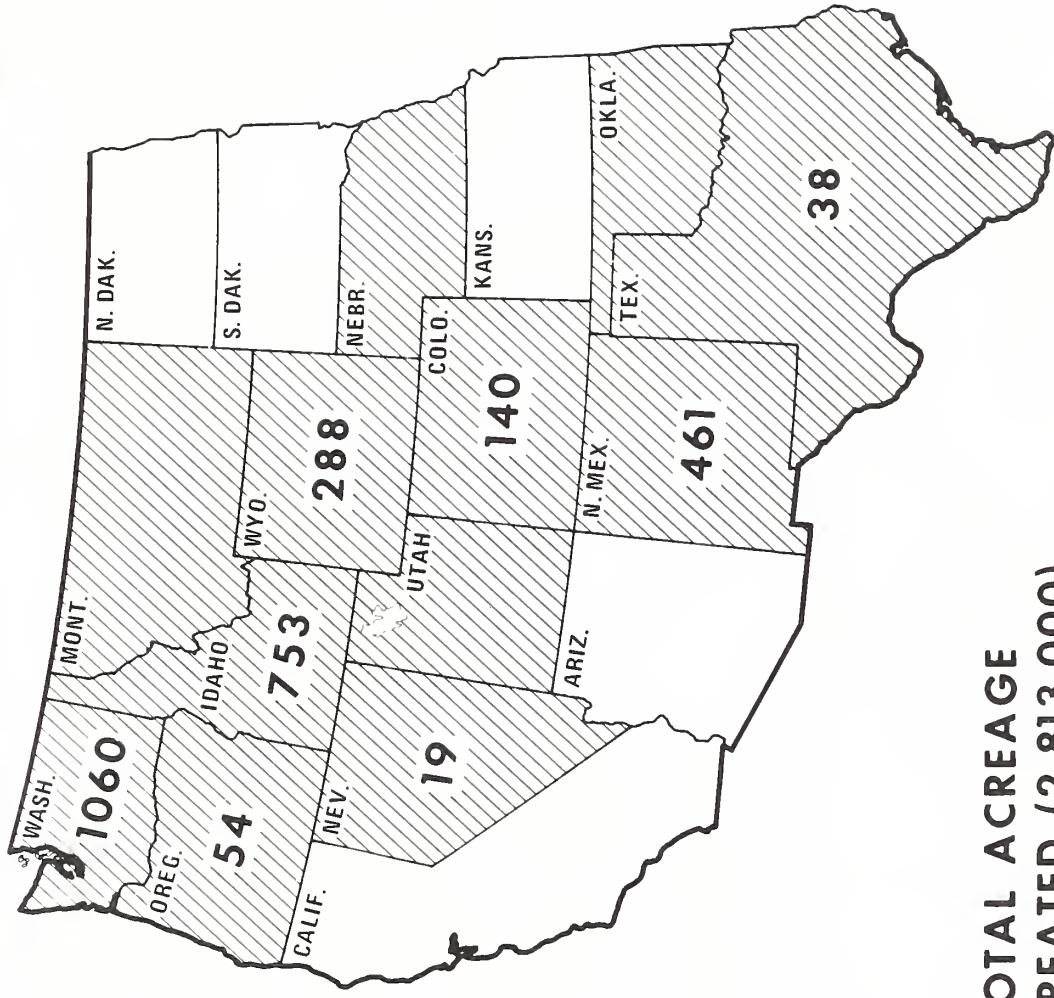
	Obligations (in thousands)	
	<u>FY 1973</u>	<u>FY 1974 Estimate</u>
<u>Plant disease and pest control:</u>		
Citrus blackfly.....	150	- -
Giant African Snail.....	79	- -
Golden Nematode.....	87	- -
Grasshopper.....	507	395
Gypsy Moth	22	- -
West Indian sugarcane root borer.....	155	- -
Total, Plant disease and pest control.....	1,000	395
<u>Animal disease and pest control:</u>		
Cattle fever ticks.....	- -	500
Screwworm.....	500	- -
Total, Animal disease and pest control.....	500	500
Total Obligations or Estimate.....	1,500	895
Unobligated Balances.....	- -	605
Total, available, Contingency Fund...	<u>1,500</u>	<u>1,500</u>

CITRUS BLACKFLY



-  NON-INFESTED CITRUS
-  BIOLOGICAL CONTROL
-  CHEMICAL CONTROL

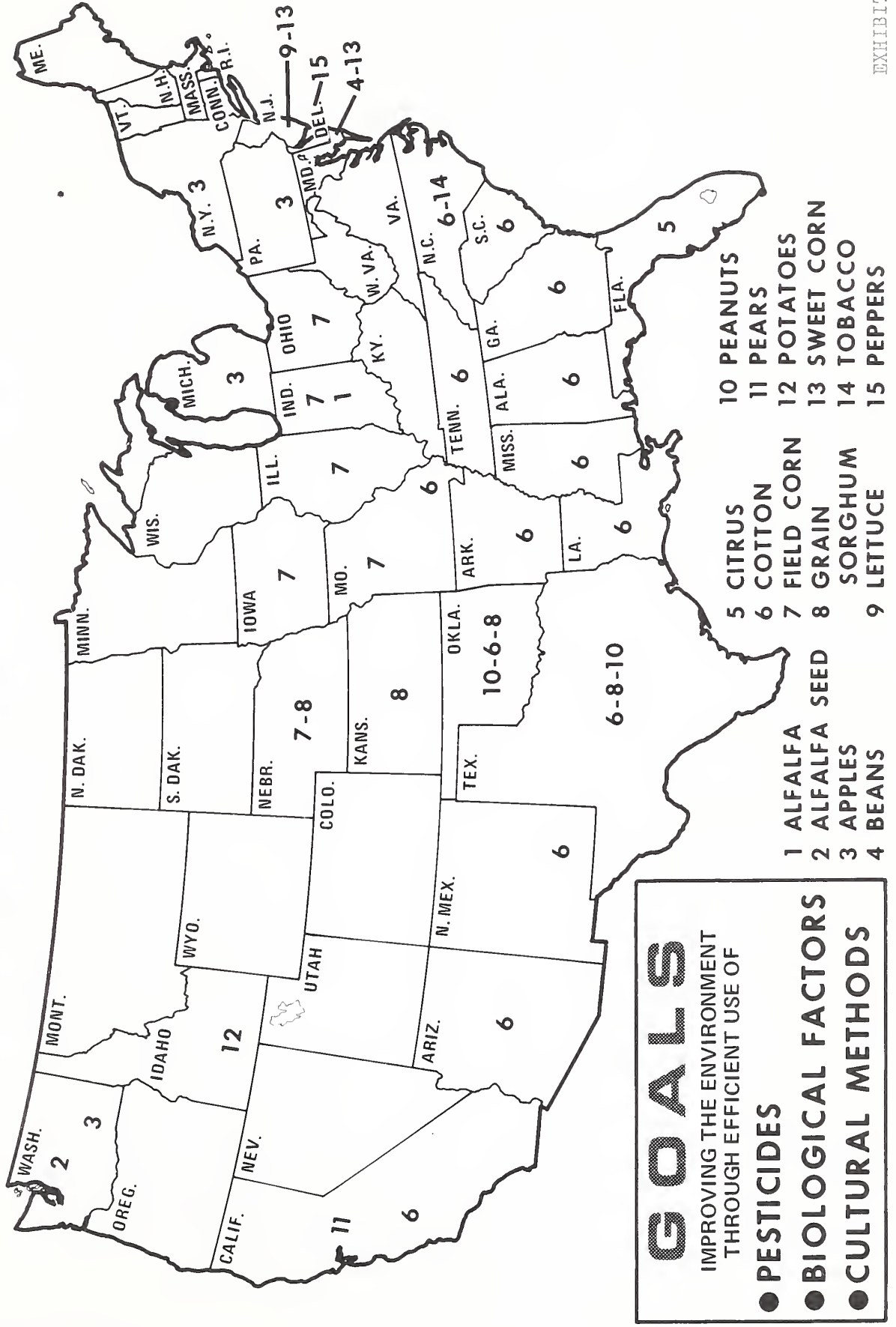
1973 GRASSHOPPER CONTROL TREATMENT



1973—TOTAL ACREAGE
TREATED (2,813,000)

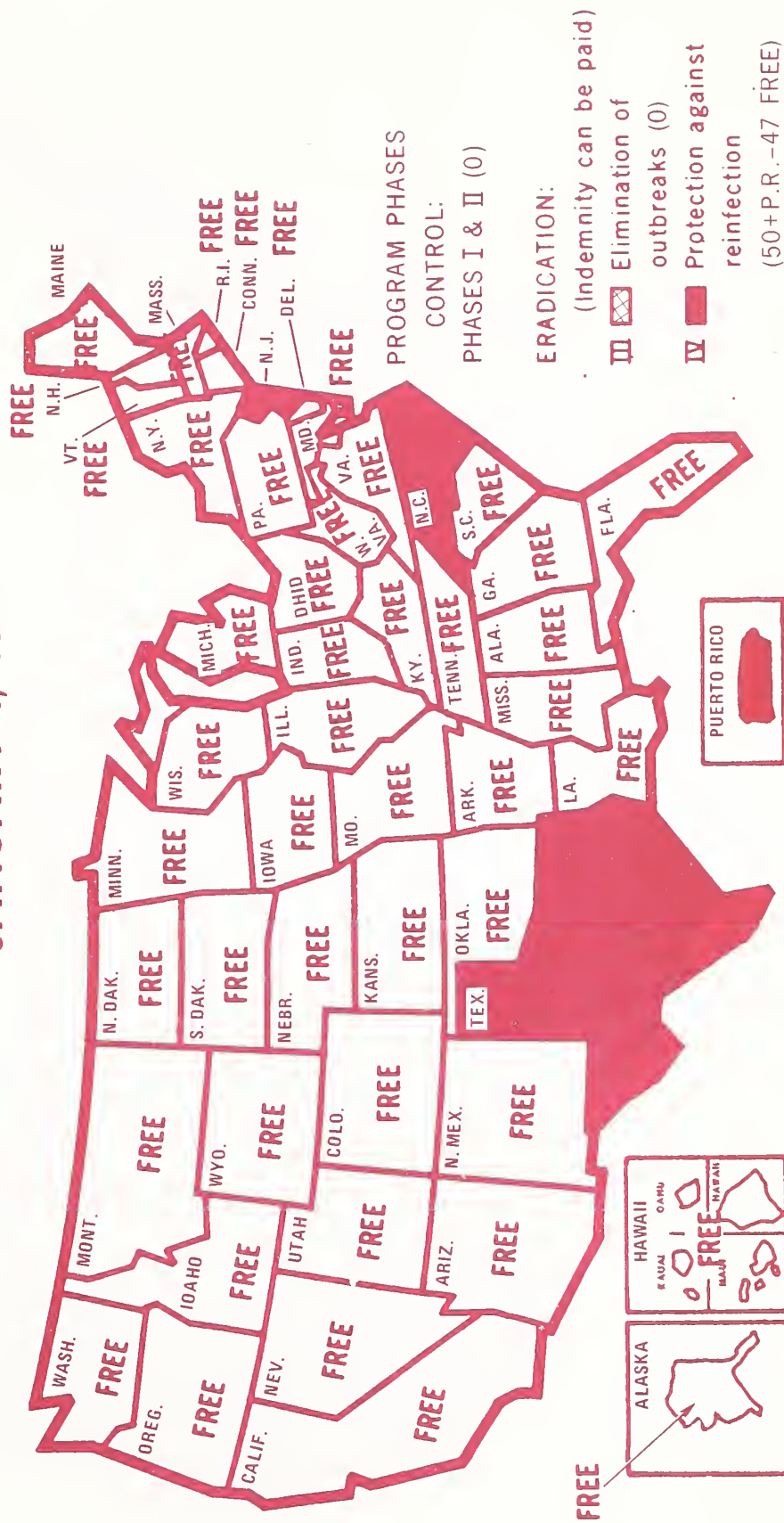
BOLD FIGURES—INDICATE TREATED ACRES IN THOUSANDS
 **1974—ESTIMATED CONTROL ACREAGE (1.5 MILLION)**
FROM ADULT SURVEY-FALL, 1973

A COOPERATIVE USDA-STATE/GROWERS PROGRAM



Hog Cholera Eradication Program

JANUARY 1, 1974

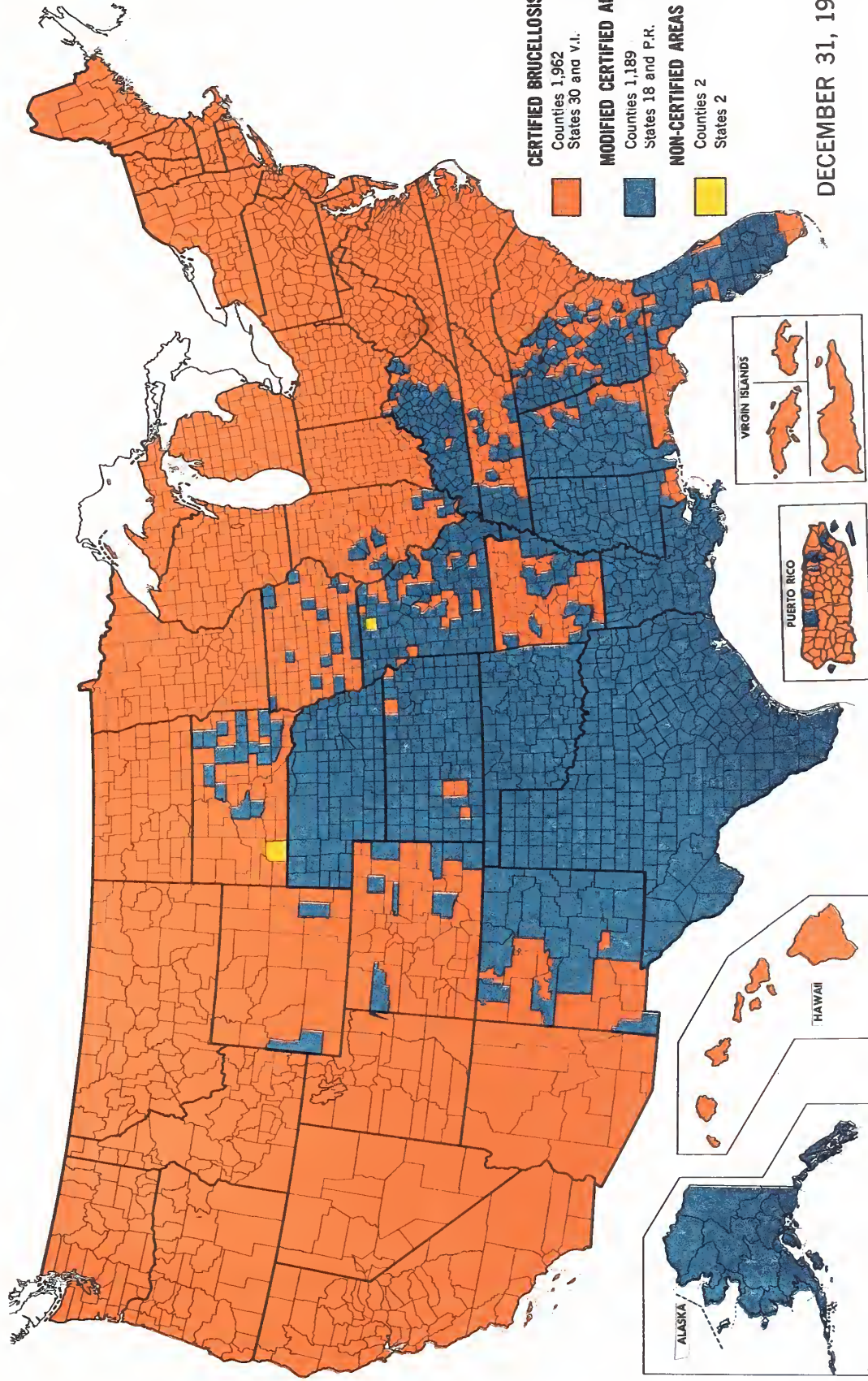


U.S. DEPARTMENT OF AGRICULTURE

VETERINARY SERVICES

ANIMAL AND PLANT HEALTH INSPECTION SERVICE

BRUCELLOSIS ERADICATION PROGRAM



(b) Animal Quarantine Station

PROJECT STATEMENT

Project	1973	1974 (estimated)	1975 (estimated)
Construction of Animal Quarantine Station.....	- -	\$130,000	\$390,660
Unobligated balance, start of year.....	-\$94,060	-94,060	-64,060
Unobligated balance, end of year.....	94,060	64,060	- -
Total available or estimate.....	- -	100,000	326,600

STATUS OF PROGRAM

Public Law 88-592, approved September 12, 1964, authorized the sale of the Animal Quarantine Station, at Clifton, New Jersey, to the City of Clifton, and application of the proceeds of sale to the planning and construction costs of a new station in the New York-New Jersey port and airport area. A sales contract between the Department and the City of Clifton was executed on December 16, 1966, at the appraised value of \$527 thousand. Of that amount, \$100 thousand was paid to the Department upon execution of the contract. An additional \$100 thousand will be paid to the Department upon award of an architect-engineering contract for development of design and construction plans, and the balance will be paid upon publication of bids for construction of the new quarantine station. A total of \$6 thousand has been spent by the Department on survey and related costs associated with obtaining a new site. An additional \$1.5 million was appropriated in 1970 for construction of the new station. Establishment of a new animal import center to replace the Clifton quarantine station has been delayed because the Department has been unable to acquire a suitable site in the New York-New Jersey port area.

ANIMAL AND PLANT HEALTH INSPECTION SERVICE
PASSENGER MOTOR VEHICLES

The 1975 Budget Estimates propose the replacement of 164 of the present 667 passenger motor vehicles. Present vehicles are being fully utilized and there are no surplus cars available.

It is estimated that all of the vehicles to be replaced will either have mileage of more than 60,000, or be 6 or more years old.

Approximately 96 percent of the vehicles owned by the Animal and Plant Health Inspection Service are operated in daily farm-to-farm travel in the control and eradication of tuberculosis, brucellosis, screwworms, sheep scabies, cattle tick fever, hog cholera, and various plant pest control programs. About 4 percent are operated in travel on animal and plant quarantine work. They are frequently operated over rough and rugged roads in all kinds of weather. In order to keep them in safe and dependable operating condition maintenance costs are frequently high. However, the control and eradication activities, testing and inspection cannot be carried on without them. In most cases, employees who own cars are reluctant to use them for even limited periods because of the hard usage to which they are subjected in this work. The replacements recommended will make it possible for those cars to be replaced which would be uneconomical to continue in operation because of their age, mileage, or both.

Age and Mileage Data for passenger-carrying vehicles on hand as of June 30, 1973:

<u>Age-Year</u> <u>Model</u>	<u>Age Data</u>		<u>Lifetime</u> <u>Mileage</u> (thousands)	<u>Mileage Data</u>	
	<u>Number of</u> <u>Vehicles</u>	<u>Percent</u> <u>of Total</u>		<u>Number of</u> <u>Vehicles</u>	<u>Percent</u> <u>of Total</u>
1965	4	1	Over 100	20	3
1966	5	1	80-100	59	9
1967	10	2	60-80	166	26
1968	63	10	40-60	159	25
1969	101	15	20-40	82	13
1970	149	23	Under 20	158	24
1971	156	24			
1972	1	- -			
1973	155	24			
Totals	644*	100		644	100

*Excludes 8 vehicles used in foreign countries.

AIRCRAFT

The 1975 Budget Estimates propose the addition of two aircraft and the replacement of two aircraft.

Additional Aircraft

Two additional aircraft will be purchased for use in the U.S.-Mexico screwworm eradication program, and will serve the purpose of observation planes, being flown behind the planes actually involved in the aerial release of sterile screwworm flies. The purchase of these aircraft was authorized in FY 1974. However, because of the need to use available funds for constructing and equipping the fly rearing facility in Mexico, purchase will be delayed until FY 1975.

These aircraft will perform the dual function of overall supervision of the fly releases to insure proper delivery in the most critical areas and the gathering of data from inflight observations critical to methods development work.

The data collected from these observations will, among other purposes, permit us to evaluate the mechanics of the fly release system which we are presently using and to develop modifications, if needed, in order to achieve maximum effectiveness in the expanded program.

Replacements

Animal and Plant Health Inspection Service-Two replacement planes are required primarily in plant pest control operations. These planes are used throughout the United States for investigating and demonstrating the use of special equipment for suppression of destructive insects attacking crops, aerial surveys, aerial application tests and insect trapping operations. Planes rapidly become obsolete and uneconomical to repair and are subject to many mishaps. Replacement will not be made, however, if it is found practical and economically feasible to retain the present equipment.

COOPERATIVE STATE RESEARCH SERVICE

Purpose Statement

The Cooperative State Research Service was established by Secretary's Memorandum No. 1462, dated July 19, 1961 and Supplemental 1, dated August 31, 1961 under Reorganization Plan No. 2 of 1953. The primary function of the Service is to administer acts of Congress that authorize Federal appropriations for agricultural research carried on by the State agricultural experiment stations of the 50 States, Puerto Rico, Guam, and the Virgin Islands, by approved schools of forestry and non-profit institutions.

Administration of payments and grants involves the review and approval in advance of each individual research proposal submitted by a State agricultural experiment station or other institution to be financed in whole or in part from Federal-grant funds, the disbursement of the funds, and the continuous review and evaluation of research programs and expenditures thereunder. The Service also encourages and assists in the establishment and maintenance of cooperation within and between the States, and participates in the planning and coordination of research programs between the States and the U.S. Department of Agriculture.

The program coordination and planning is carried out by a Cooperative State Research Service staff located entirely in Washington, D.C.

Available Funds and Man-Years
1973 and Estimated 1974 and 1975

Item	Actual 1973		Estimated Available, 1974		Budget Estimate 1975	
	Amount	Man-Years	Amount	Man-Years	Amount	Man-Years
Cooperative State Research Service:						
Appropriation.....	\$91,438,000:	78	\$90,105,300:	74	\$98,701,300:	74
Obligations under other USDA appropriations:						
Various research agencies for share of cost of Current Research Information System (CRIS).....	382,561:	15	379,000:	17	408,000:	17
Agricultural Research Service:						
Pesticides Coordination Fund.....	9,284:	--	--	--	--	--
Office of the Secretary.....	266:	--	--	--	--	--
Total, Agricultural Appropriation Bill.....	91,830,111:	93	90,484,300:	91	99,109,300:	91
Other Funds:						
Federal.....	477:	--	6,000:	--	7,000:	--
Non-Federal.....	24,951:	1	8,000:	--	8,000:	--
Total, Other Funds.....	25,428:	1	14,000:	--	15,000:	--
Total, Cooperative State Research Service.....	91,855,539:	94	90,498,300:	91	99,124,300:	91
	<u>1973 Actual</u>		<u>1974 Estimated</u>		<u>1975 Estimated</u>	
End-of-Year Employment:						
Permanent full-time.....	89		79		79	
Other.....	5		8		8	
Total.....	94		87		87	

Cooperative State Research Service

Appropriation Act, 1974	\$89,880,000
Budget Estimate, 1975	98,701,300
Increase in Appropriation	+8,821,300

Adjustments in 1974:

Appropriation Act, 1974	\$89,880,000	
Transfer from ASCS for pay costs	+148,000	
Activities transferred from Office of Management Services a/	+77,300	
Adjusted base for 1975		90,105,300
Budget estimate, 1975		98,701,300
Increase over adjusted 1974		+8,596,000

a/ Pursuant to Memorandums of Agreement approved June 22, 1973 and June 28, 1973, information and messenger functions were transferred to the Cooperative State Research Service from the Office of Management Services.

SUMMARY OF INCREASES
(On basis of adjusted appropriation)

	<u>1974</u>	<u>Increases</u>	<u>1975 Estimate</u>
Payments to agricultural experi- ment stations under the Hatch Act, and for penalty mail.....	\$70,104,000	+\$4,044,000	\$74,148,000
Grants for cooperative forestry research.....	6,203,000	+146,000	6,349,000
Contracts and grants for scientific research.....	11,583,000	+4,253,000	15,836,000
Federal Administration (direct appropriation):			
GSA space rental costs.....	- -	+123,000	123,000
Annualization of the pay cost increase effective in FY 1974.....	148,000	+30,000	178,000
All other.....	567,300	- -	567,300
Total, Federal Administration.....	715,300	+153,000	868,300
Funds for rural development research.....	1,500,000	- -	1,500,000
Total available.....	<u>90,105,300</u>	<u>+8,596,000</u>	<u>98,701,300</u>

PROJECT STATEMENT
(On basis of adjusted appropriation)

Project	1973	1974 (estimated)	Increases or Decreases	1975 (estimated)
1. <u>Payments to agricultural experiment stations under the Hatch Act, and for penalty mail:</u>				
a. Research program	\$66,740,313	\$67,847,341	+\$4,012,890	\$71,860,231
b. Penalty mail	258,980	395,000	-93,000	302,000
c. Set-aside for Federal Administration (3%)	1,765,312	1,861,659	+124,110	1,985,769
Total, Hatch Act	68,764,605	70,104,000	+4,044,000(1)	74,148,000
2. <u>Grants for cooperative forestry research</u>	4,944,000	6,203,000	+146,000(2)	6,349,000
3. <u>Contracts and grants for scientific research</u>	15,400,000	11,583,000	+4,253,000(3)	15,836,000
4. <u>Funds for rural development research:</u>				
a. Research program	- -	1,440,000	- -	1,440,000
b. Set-aside for Federal Administration (4%)	- -	60,000	- -	60,000
Total, Rural Development	- -	1,500,000	- -	1,500,000
5. <u>Federal Administration (direct appropriation)</u>	490,000	715,300	+153,000(4)	868,300
Unobligated balance	1,839,395	- -	- -	- -
Total available or estimate	91,438,000	90,105,300	+8,596,000	98,701,300
Transfer from ASCS for increased pay costs	- -	-148,000		
Transfers from Office of Management Services	- -	-77,300		
Total, appropriation	91,438,000	89,880,000		

EXPLANATION OF PROGRAM

The appropriation "Cooperative State Research Service" funds the activities authorized under the following acts:

1. Payments to agricultural experiment stations under the Hatch Act, and for penalty mail - (Agricultural Experiment Stations Act of August 11, 1955 (Hatch Act of 1887 as Amended - 7 U.S.C. 361a-361i), Educational Amendments of 1972 (86 Stat 350-52).)
 - a. Research Program: The Hatch program of research at the State agricultural experiment stations is aimed at promoting efficient production, marketing, distribution and utilization of crops and animals that are essential to the food supply or health and welfare of the people of the United States. This program is also aimed at improving rural living.

Six research program groupings encompass the range of research funded under this act:

- (1) Natural Resources - Areas of research included are soil and land use, water and watersheds, outdoor recreation, environmental quality, fish and wildlife and remote sensing. This research provides most of the basic and applied soil and plant nutrition information that assures adequate crops and food production. It also is providing ways of minimizing or eliminating environmental pollution that may occur during the production and processing of farm products. This research comprises over 12% of the total Hatch funds for research.
- (2) Forestry Resources - Forestry related research under Hatch has similar research objectives as the McIntire-Stennis Cooperative Forestry Research Program and is fully coordinated with it. The Hatch forestry research program is characterized by a higher degree of multi-institutional or regional projects. As in the McIntire-Stennis Cooperative Forestry Research program, a large part of the work is devoted to solving problems related to timber production. Considerable emphasis is also placed on research to bring about improved outdoor environment. This research comprises about 2% of the total Hatch funds for research.
- (3) Crops Resources - Areas of research included under this research program grouping are crop varieties and production systems for dependable and efficient production, quality improvement, quality maintenance, product development and related commodity aspects of marketing of crops. This research develops crop protection components for control of plant disease, nematodes, insects, pests and weeds and provides the necessary research data base to increase total production and efficiency of production of feed grains, forage and fruit and vegetable crops. It also establishes the potential for improved nutrient quality, safety and other quality factors in field crops, and in fruit and vegetable crops and their products. Crops serve not only as a direct source of human food but also as an indirect source since the quantity of domestic produced meats is largely dependent on the availability and the reliability of animal feeds derived from crops. This research comprises over 37% of the total Hatch funds for research.
- (4) Animal Resources - Areas of research included under this research program grouping are protection, production and management aspects of beef and dairy animals, swine, sheep, other animals and poultry. It also includes quality improvement, product development and related commodity aspects of marketing of animal, dairy and poultry products. This research develops the basic and applied information needed to control or eradicate diseases of livestock and poultry, to improve the efficiency of production, and to improve product quality of meat, milk and egg products. This research comprises over 27% of the total Hatch funds for research.
- (5) People, Communities and Institutions - Areas of research included under this research program grouping are food and nutrition, food safety and rural development. This research develops information needed to establish nutrient requirements of specific age groups and the nutrient content of foods. This information is utilized in developing dietary recommendations that can be used by all segments of the population to achieve optimum nutritional status.

It provides the information needed to assure that food is produced, processed, stored and distributed under conditions which guarantee that it is safe and wholesome when it reaches the consumer. It also provides the knowledge necessary to improve the quality of living in rural America. This research comprises over 12% of the total Hatch funds for research.

- (6) Competition, Trade Adjustments and Income Policy - Areas of research included under this research program grouping are farm adjustments, prices and income, economic aspects of marketing and competition. Economic aspects of marketing research is concerned with efficiency in marketing agricultural products, supply and demand analysis, improved performance in the marketing system and changing competitive interrelationships. This research develops and evaluates alternative policies and programs for enhancing the performance of agricultural markets giving due regard to the appropriate role of farmers, marketing agencies and consumers in the control of the food production-marketing system. This research comprises over 9% of the total Hatch funds for research.
 - b. Penalty Mail: The Hatch Act of 1887, as Amended (7 U.S.C. 361f), provides for the mailing under penalty indicia by agricultural experiment stations of bulletins, reports, periodicals, reprints of articles, and other publications necessary for the dissemination of results of research, including lists of such publications. Mailings include not only those to individual farmers upon request but also to newspapers, libraries, other experiment stations, and organizations interested in results of research and dissemination of such results. Under Title 39 U.S.C. 3206(b) 3202(a)(4), the Department pays the U.S. Postal Service to cover postage of mail sent under the penalty privilege by the State agricultural experiment stations.
 - c. Set-Aside for Federal Administration: Research at the State agricultural experiment stations is organized by projects. These are submitted for review and evaluation by the Cooperative State Research Service and are also subject to periodic on-site review for adequacy and progress. Administration includes disbursement of funds and a continuous review and evaluation of the research programs of the State agricultural experiment stations supported wholly or in part from Hatch funds. This Agency encourages and assists in the establishment of cooperation within and between the States, and also actively participates in the planning and coordination of research programs between the States and the Department at the regional and national level. Major emphases in CSRS activities include both effective monitoring of ongoing programs and substantial assistance in organizing, planning, and providing other kinds of technical service to the States in cooperation with other Federal agencies. The Hatch Act provides that 3% of funds appropriated under the Hatch Act be set aside for Federal administration.
2. Grants for Cooperative Forestry Research - (Cooperative Forestry Research Act of October 10, 1962 (16 U.S.C. 582a-58207), Education Amendments of 1972 (86 Stat 350-52).)

Research funded under this act is described within the following areas: inventory and appraisal of forest resources; forest production systems and management; forest protection; harvesting, manufacturing, and marketing; forest watersheds, soil, and pollution control; forest range wildlife, fisheries habitat development; forest recreation and landscape values; and alternative uses of forest land. Timber production and wood utilization and distribution systems are key elements of forestry research. The research is planned and directed to provide answers to

the complex questions that face forest land managers who are seeking to produce an adequate timber supply for home and other construction, to meet the demands for wildlife production and recreational opportunity on forests, and to assure an acceptable level of environmental quality in relation to all forest operations and uses.

3. Contracts and grants for scientific research - (Act of September 6, 1958 (42 U.S.C. 1891-1893), and the Act of August 4, 1965 (7 U.S.C. 4501).)

This program provides special concentration on problems of national interest where such concentration is desirable or necessary beyond the normal emphasis in the formula grant program. It has two components. A specific research program which places major research emphasis on specific national problems identified by the Department and by the Congress and a specific research program for 1890 Land-Grant institutions and Tuskegee Institute. Grants are approved for a maximum of five years. Under the specific grants which are directed to major national needs, research on soybeans and on rural development have received principal emphasis. Under the program of support to 1890 colleges and Tuskegee Institute the major emphasis is on research to aid disadvantaged rural people.

4. Funds for rural development research - (Rural Development Act of 1972 (7 U.S.C. 2661-2668).)

- a. Research Program: This program provides the opportunity to utilize and build upon the research, extension and community service capability of public and private institutions of higher education in each State to expand scientific inquiry and educational backup for rural development. The higher educational and research institutions in each State including the Land Grant 1890 institutions are authorized to assist in developing and disseminating scientific information, technical assistance and feasibility studies required to improve the rural development capabilities of local citizens, agencies and governments.

- b. Set-aside for Federal administration: Federal administration includes disbursement of funds and review and evaluation of proposals. The review and evaluation includes consideration of the legislative requirements, of the quality of the proposal, and of potential impact of the research proposed on rural communities. The Rural Development Act provides that 4% of funds appropriated for research be set aside for Federal administration.

5. Federal administration (direct appropriation) - Authority for direct appropriations is provided in the annual USDA and Related Agencies Act.

These funds are used to provide support services in connection with research planning and coordination of all programs administered by the Cooperative State Research Service to provide adequate monitoring of all projects, both in the proposal stage and during the conduct of the research, and to meet pay cost increases and space rental costs.

JUSTIFICATION OF INCREASES AND DECREASES

- (1) A net increase of \$4,044,000 for Payments to agricultural experiment stations under the Hatch Act, and for penalty mail consisting of:
 - (a) An increase of \$4,137,000 under the formula provision of the Hatch Act (including an increase of \$124,110 for administration of the Hatch Act). (\$69,709,000 available in 1974.)

Need for Increase: The cost per unit of research conducted by State agricultural experiment stations continues to increase. The increase in the cost of conducting research results from rising salaries and wages, increased cost of services, supplies and materials and equipment costs. To determine these costs, CSRS conducts scientist salary surveys. Since 1960, annual average increases have ranged from 2.6 to 8.6 percent in the 53 State agricultural experiment stations; over the 1960-1973 period the average has been 6.2 percent. Data from 53 stations for 1973 show an increase of 6.2 percent.

In order to cover these increased costs to maintain a program of equal support, \$4,012,890 is required for payments to States.

The Hatch Act (Sec. 3(c)) provides that three percent of the increased appropriation (\$124,110) be made available for administration. The additional funds will be used to provide quality evaluation and review of research programs and to meet increasing demands for information and research planning and coordination. In addition, they will help defray the increased costs of travel, communications, and other services. This increase does not provide for any additional staff for the Cooperative State Research Service.

- (b) A decrease of \$93,000 for Penalty Mail under the Hatch Act (\$395,000 available in 1974).

This decrease is for non-recurring penalty mail costs of the agricultural experiment stations incurred in fiscal year 1972.

- (2) An increase of \$146,000 for Grants for Cooperative Forestry Research (\$6,203,000 available in 1974).

Need for Increase: The same factors described above under the Hatch Act payments have increased the cost of conducting cooperative forestry research at schools of forestry. To maintain programs at existing levels would require \$146,000 in payments to States to cover these increased costs.

- (3) An increase of \$4,253,000 for Contracts and Grants for Scientific Research (\$11,583,000 available in 1974) consisting of:
 - (a) An increase of \$653,000 for research at the Colleges of 1890 and Tuskegee Institute (\$10,883,000 available in 1974).

Need for Increase: The same factors described above under the Hatch Act payments have increased the cost of conducting research at the Colleges of 1890. To maintain programs at existing levels would require \$653,000 to cover these increased costs.

- (b) An increase of \$1,000,000 for grants for research on environmental quality (No funds available in 1974).

Need for Increase: Farmers who produce animal and poultry products will be expected to comply with the legal requirements of zero discharge of pollutants into navigable waters. To meet this goal of zero discharge many producers will be required to alter their practices or adopt new technology or go out of business. In many cases the needed technologies are not completely developed so that alternatives are poorly defined and economic analyses not possible. A specific need is to develop methods for converting wastes into useful products.

Air quality and water quality regulations are causing cities to look to the land as the primary location for disposal of municipal effluent and sludge. The soil-plant system does have a large capacity to decompose such organic materials and to inactivate many potentially toxic substances. However, the system has limitations. The soil is an important part of the life support system of earth and is also the medium in which the production of food, feed, and fiber takes place. Agriculture has the responsibility of safeguarding the continuing productivity of the soil-plant-water system.

Research Areas that Require Priority Emphasis are:

1. Development of processes by which wastes from livestock production units can be made into useful by-products.
 2. Development of methods and practices to minimize pollution hazards from land application of municipal sludge and effluent.
- (c) An increase of \$1,000,000 for grants for food and nutrition research (No funds available in 1974.)

Need for Increase: Additional research information is needed on nutritional requirements, nutritional status and the nutritional value and composition of diets of the various socioeconomic groups within the U. S. population. This information will undergird action programs designed to improve the quality of nutrition of the individuals within these groups.

Research Areas that Require Priority Emphasis are:

1. Nutrient requirements of specific age groups, sexes, and other segments of the population.
 2. Effects of processing and fabrication of new foods from traditional raw materials on nutrient quality.
 3. Nutritional patterns, attitudes, motivations, and diets of individuals within specific socioeconomic groups.
 4. Effects of kind and type of fats, specific foods and dietary patterns on lipid utilization and physiological state.
- (d) An increase of \$1,000,000 for grants for research on beef and pork production (No funds available in 1974.)

Need for Increase: The increased research is needed to: (1) Accelerate the development of knowledge of biological and management factors required to increase beef production at a rate fast enough to keep pace with the anticipated increased demand, and (2) Provide the same type of knowledge base for pork production to meet the anticipated needs for pork.

Areas Requiring Priority Emphasis are:

- Beef:
1. Research to increase the reproductive capacity of beef cows. This is the primary limiting factor in increasing the supply of beef. Studies of natural and induced ways to increase reproductive efficiency are required.
 2. Increased forage resources are required to support the increased beef herd. Research to improve cultural and management practices on range and other forage lands will be needed.
 3. The reduction or elimination of respiratory and calfhood diseases is vital to accomplish the goal of sufficiently increased beef production. Studies on these disease complexes will be necessary to develop control methods.

- Pork: 1. In swine production, the efficiency of reproduction is also a major limitation. Physiological and management studies are needed.
2. In pork production, studies on the nature and elimination of the porcine stress syndrome and baby pig diseases are required to provide for the necessary reduction or elimination of these.

- (e) An increase of \$100,000 for grants for soybean research (\$400,000 available in 1974.)

Need for Increase: Worldwide demand for the U. S. soybean crop has gone up sharply and prices have risen for soybeans and soybean meal in the production of poultry, pork, beef, and dairy products in the United States. It is anticipated that the world demand for soybeans will double by 1985. Variety improvement principles used for other crops are being applied in research to increase the yield potential of soybeans. Although certain factors influencing crop yield have been studied, other components must be explored in order to realize the breakthrough necessary to increase yields. Continued concerns over seed quality as it affects yield potential, coupled with more recent awareness of seed and processed product quality in relation to human and animal health, and position of the commodity in the market place, dictate a need for increased support.

Research Areas that Require Priority Emphasis are:

1. Accelerated effort will be devoted to identifying the functions of biochemical and physiological factors as they may interact with environmental conditions to affect yield ability, seed quality, and other agronomic attributes.
2. Specific increased support will be devoted to work on superior lines, coupled with approaches to increase the genetic diversity of soybeans. Research aimed at developing multiple pest resistance will also be accelerated. Multiple crop protection strategies will be developed, involving resistance to diseases and insects, management practices, biological control, pesticides and other possible approaches as they are discovered and feasibility is determined.
3. Increased effort will be devoted to weed control and soil factors limiting production.

- (f) An increase of \$500,000 for grants for pest management research (No funds available in 1974.)

Need for Increase: This effort is a part of the Expanded Pest Management Program of the U. S. Department of Agriculture, the National Science Foundation and the Environmental Protection Agency aimed at accomplishing effective and economical pest control with minimum adverse environmental risk. The CSRS component is aimed at integrating pest control technology into a pest management system and evaluating and refining that system preparatory to general application. The ultimate goal is to improve the yield and quality of the crop under protection and maintain stability in crop production.

Research Areas that Require Priority Emphasis are:

1. Development of methodologies for the biological control of losses in a range of important crops, including procedures for predicting the effect on yield using specific control techniques.
2. Development of promising pest control technologies for integrated pest management programs.
3. Development of biological control of weeds using insect and pathogen populations and their variants as selected biocontrol agents.

Plan of Work for all Special Grant items discussed above: Research proposals in priority areas will be solicited from qualified institutions. Selection will be made on the basis of quality of the proposal, appropriateness, feasibility of attaining the objectives, and quality of the research program of the submitting institution in the relevant area.

- (4) An increase of \$153,000 for Federal administration (direct appropriation) (\$715,300 available in 1974) consisting of:

GSA space rental costs +\$123,000

Annualization of pay cost increases
effective in fiscal year 1974 +\$30,000

* * * *

The following table summarizes the funds available for Federal administration under the Hatch Act and the Rural Development Act of 1972, including funds available under the direct appropriation for Cooperative State Research Service administration:

	<u>1973</u>	<u>1974</u> <u>Appropriation</u>	<u>Increase</u>	<u>1975</u> <u>Estimate</u>
Direct appropriation	\$490,000	\$715,300	+\$153,000	\$868,300
Set-aside for Federal administration of Hatch Act (3%).....	1,835,589	1,861,659	+124,110	1,985,769
Set-aside for Federal administration of Rural Development Act (4%).....	- -	60,000	- -	60,000
Total.....	<u>2,325,589</u>	<u>2,636,959</u>	<u>+277,110</u>	<u>2,914,069</u>

STATUS OF PROGRAM

This appropriation provides the Federal Government's contribution to land-grant agricultural experiment stations, schools of forestry and other eligible institutions in the various States and in Puerto Rico, Guam and the Virgin Islands, established pursuant to the provisions of the Hatch Act of 1887, as amended by the Act of August 11, 1955, and further amended by P.L. 92-318 approved June 23, 1972, Cooperative Forestry Research Act of October 10, 1962, as amended by P.L. 92-318 approved June 23, 1972, Research Facilities Act of July 22, 1963, Grants for Scientific Research, Section 2 of Public Law 89-106, approved August 4, 1965, and Rural Development Act of 1972, Title V of Public Law 92-419, approved August 30, 1972.

The State institutions conduct research and experiments on the problems constantly encountered in the development of a permanent and sustaining agriculture and forestry, and in the improvement of the economic and social welfare of rural and urban families. Because of differences in climate, soil, market outlets, and other local conditions, each State has distinct problems in the production and marketing of crops and livestock. Farmers, foresters and rural people in the individual States naturally look to their State agricultural experiment stations, universities and colleges for solution of the State and local problems and, in recent years, have requested increased services to help meet changing conditions.

Research programs at the State agricultural experiment stations, to be most effective, include participation in regional and national programs. Joint attack by a group of State stations is the most effective and often the only practical approach to problems of common interest. The stations, to an ever increasing extent, are acting together as regional groups to provide cooperative coordinated attacks on problems of regional and national interest. In a similar manner, the research programs of the State agricultural experiment stations and the Department of Agriculture are supplementary and interdependent.

The Federal-grant funds constitute a powerful force in bringing about inter-State cooperation and Federal-State collaboration in the planning and conduct of this overall program of agricultural research. Therefore, the impact of the Federal-grant funds cannot be fully evaluated solely on the basis of the amount of funds provided.

Research at the State institutions is organized into a program of projects that is submitted for review and evaluation by the Service. The program of projects is financed wholly or in part from Federal-grant funds. Programs and projects are evaluated periodically with station scientists by administrators and technical staff of the Cooperative State Research Service. The evaluation includes consideration of quality and productivity of the program and projects. The continuing process of research evaluation by station scientists and the staff of the Cooperative State Research Service results in a dynamic program with approximately 15 to 20 percent of the projects being replaced by new projects each year.

Distribution of Payments:

Hatch Act

The Agricultural Experiment Stations Act of August 11, 1955 (Hatch Act, as amended) provides that the distribution of Federal payments to States for fiscal year 1955 shall become a fixed base and that any sums appropriated in excess of the 1955 level shall be distributed in the following manner:

- 20% shall be allotted equally to each State.

- not less than 52% shall be allotted to the States as follows:

- One-half in an amount proportionate to the relative rural population of each State to the total rural population of all States, and one-half in an amount proportionate to the relative farm population of each State to the total farm population of all States.

-not more than 25% shall be allotted to the States for cooperative research in which two or more State agricultural experiment stations are cooperating to solve problems that concern the agriculture of more than one State.

-3% shall be available to the Secretary of Agriculture for the administration of this Act.

The Act also provides that any amount in excess of \$90,000 available for allotment to any State, exclusive of the regional research fund, shall be matched by the State out of its own funds for research, and for the establishment and maintenance of facilities necessary for the prosecution of such research. It also requires marketing research be continued as it existed in fiscal year 1955 and provides that 20% of the funds appropriated for distribution to States in excess of the 1955 appropriations shall be used for conducting marketing research projects approved by the Department of Agriculture.

Cooperative Forestry Research

The Cooperative Forestry Research Act of October 10, 1962 provides that the apportionment among States shall be determined by the Secretary after consultation with a national advisory board of not less than seven officials of the forestry schools of the State-certified eligible colleges and universities chosen by a majority of such schools. In making such apportionments consideration shall be given to pertinent factors including, but not limited to, areas of non-Federal commercial forest land and volume of timber cut annually from growing stock. The Act also limits the payments to the amount made available and budgeted from non-Federal sources by the certified institutions for expenditure for forestry research.

Scientific Research Grants

Section 2 of the Act of August 4, 1965 (7 U.S.C. 450i) authorizes grants to State agricultural experiment stations, colleges, universities, and other research institutions and organizations and to Federal and private organizations and individuals for research to further the programs of the Department of Agriculture. Of the total funds available, \$283,000 was used each year from 1967-1971 to finance grants to the sixteen land-grant colleges established pursuant to the second Morrill Act of 1890. In fiscal year 1973, \$10,883 million of the \$15.4 million appropriated for this program was earmarked for the colleges of 1890. Of the \$11,583 million appropriated in fiscal year 1974 for this program, \$10,883 million, or the same level as fiscal year 1973, was made available for the colleges of 1890.

Research Facilities

The Research Facilities Act of July 22, 1963 provides that funds be allocated as follows:

- one-third equally to each State.
- two-thirds allotted to the States as follows:
 - One-half in an amount proportionate to the relative rural population of each State to the total rural population of all States, and one-half in an amount proportionate to the relative farm population of each State to the total farm population of all States.

The Act also limits the payments to the amount made available by such State from non-Federal funds for the same purpose.

Funds were appropriated, under the authority of this Act, for fiscal years 1965-1968 and 1970. No funds were appropriated for this program in fiscal years 1969 and 1971-1974.

Rural Development Research

The Rural Development Act of 1972 provides that funds be allocated as follows:

- 20% shall be allocated equally to each State.
- 66% shall be allocated to each State as follows:
 - One-half in an amount proportionate to the relative rural population of each State to the total rural population of all States, and one-half in an amount proportionate to the relative farm population of each State to the total farm population of all States.
- 10% shall be allocated to the States for research serving two or more States in which universities in two or more States cooperate or which is conducted by one university to serve two or more States.
- 4% shall be available to the Secretary of Agriculture for Federal administration, national coordination, and program assistance to the States.

Penalty Mail

The Hatch Act of 1887, as amended (7 U.S.C. 361f), provides for the mailing under penalty indicia by agricultural experiment stations of bulletins, reports, periodicals, reprints of articles, and other publications, including lists of publications necessary for the dissemination of results of research. Mailings include not only those to individual farmers upon request but also to newspapers, libraries, other experiment stations, and organizations interested in results of research and dissemination of such results.

Under Title 39 U.S.C. 3206(b) and 3202(a)(4), the Department paid to the U.S. Postal Service \$259,000 to cover postage of mail sent under the penalty privilege by the State agricultural experiment stations during fiscal year 1973. This payment covered the mailing of approximately two million items by the experiment stations in the 50 States, Puerto Rico, Guam, and the Virgin Islands. Approximately the same volume of mail is anticipated in fiscal years 1974 and 1975. Funds of \$395,000 have been set-aside from the fiscal year 1974 appropriation for payments to States under the Hatch Act for payments to the U.S. Postal Service of which \$93,000 is for payment of outstanding fiscal year 1972 postal costs.

Table 1 shows the distribution of payments from appropriations of the Cooperative State Research Service to State agricultural experiment stations and other State institutions. It also reflects non-Federal funds (primarily State appropriations) for research at State agricultural experiment stations, and at cooperating forestry and other State institutions for the fiscal year 1973. Table 2 shows the available funds for State agricultural experiment stations and other eligible institutions for the fiscal years 1973, 1974, 1975. Table 3 indicates the estimated distribution of 1974 Federal funds by research program areas. Table 4 shows the fiscal year 1974 and proposed fiscal year 1975 distribution of special grant funds to the 1890 Land-Grant Colleges and Tuskegee Institute.

Table 1

Distribution of Federal Payments to States and Non-Federal Funds for Research at State Agricultural
Experiment Stations and Other State Institutions - Fiscal Year 1973

State	Hatch Act, as amended				Cooperative:		Contracts:		Total Federal- Grant Funds	Non-Federal Funds	Grand Total
	Regular Formula	Regional Research	Total	Forestry Research (M-S)	Grants for: Scientific Research	and Other Funds					
Alabama.....	\$1,399,506:	\$297,114:	\$1,696,620:	\$158,084:	\$1,470,915:	-	\$3,325,619	\$5,193,130	\$8,518,749		
Alaska.....	367,222:	47,135:	414,357:	85,293:	-	-	499,650	840,143	1,339,793		
Arizona.....	494,777:	289,506:	784,283:	67,094:	180,000:	-	1,031,377	5,177,008	6,208,385		
Arkansas.....	1,160,076:	251,630:	1,411,706:	145,952:	743,628:	-	2,301,286	4,960,791	7,262,077		
California.....	1,421,635:	524,741:	1,946,376:	164,151:	175,000:	-	2,285,527	31,053,908	33,339,435		
Colorado.....	630,734:	394,533:	1,025,267:	97,424:	-	-	1,122,691	3,072,783	4,195,474		
Connecticut.....	512,216:	193,621:	705,837:	57,994:	-	-	763,831	2,717,156	3,480,987		
Delaware.....	396,096:	152,074:	548,170:	30,698:	268,967:	-	847,835	928,234	1,776,069		
Florida.....	850,409:	170,978:	1,021,387:	142,920:	608,582:	-	1,772,889	15,394,031	17,166,920		
Georgia.....	1,486,733:	380,280:	1,867,013:	167,183:	798,475:	-	2,832,671	9,016,152	11,848,823		
Hawaii.....	418,693:	153,445:	572,138:	42,830:	-	-	614,968	3,748,862	4,363,830		
Idaho.....	577,600:	235,784:	813,384:	106,523:	45,000:	-	964,907	2,724,717	3,689,624		
Illinois.....	1,582,807:	354,488:	1,937,295:	88,325:	158,250:	-	2,183,870	8,345,486	10,529,356		
Indiana.....	1,410,731:	329,117:	1,739,848:	91,358:	168,250:	-	1,999,456	6,776,003	8,775,459		
Iowa.....	1,446,544:	489,427:	1,935,971:	70,127:	170,000:	-	2,176,098	6,853,501	9,029,599		
Kansas.....	968,605:	283,239:	1,251,844:	45,863:	-	-	1,297,707	6,806,869	8,104,576		
Kentucky.....	1,562,700:	312,744:	1,875,444:	100,457:	735,556:	-	2,711,457	4,595,108	7,306,565		
Louisiana.....	1,050,602:	223,187:	1,273,789:	148,985:	704,570:	-	2,127,344	8,268,847	10,396,191		
Maine.....	551,933:	207,515:	759,448:	139,887:	-	-	899,335	1,660,889	2,560,224		
Maryland.....	721,853:	245,029:	966,882:	73,160:	451,152:	-	1,491,194	2,855,624	4,346,818		
Massachusetts.....	646,777:	246,902:	893,679:	64,061:	-	-	957,740	1,192,383	2,150,123		
Michigan.....	1,496,516:	281,554:	1,778,070:	133,821:	190,000:	-	2,101,891	8,636,479	10,738,370		
Minnesota.....	1,373,601:	306,902:	1,680,503:	124,721:	-	-	1,805,224	9,627,837	11,433,061		
Mississippi.....	1,474,536:	304,241:	1,778,777:	152,018:	1,064,598:	-	2,995,393	6,841,504	9,836,897		
Missouri.....	1,433,463:	296,335:	1,729,798:	115,622:	870,782:	-	2,716,202	6,158,230	8,874,432		
Montana.....	550,515:	276,097:	826,612:	109,557:	-	-	936,169	3,437,039	4,373,208		
Nebraska.....	876,120:	307,497:	1,183,617:	39,797:	76,922:	-	1,300,336	9,062,300	10,362,636		
Nevada.....	363,774:	149,555:	513,329:	33,731:	-	-	547,060	1,168,853	1,715,913		
New Hampshire.....	437,872:	153,527:	591,399:	79,226:	-	-	670,625	537,410	1,208,035		
New Jersey.....	627,182:	370,237:	997,419:	51,929:	-	-	1,049,348	6,270,632	7,319,980		
New Mexico.....	515,531:	157,899:	673,430:	54,963:	90,000:	-	818,393	1,670,513	2,488,906		

State	Hatch Act, as amended				Cooperative:				Contracts:			Total Federal- Grant Funds	Non-Federal Funds	Grand Total
	Regular Formula	Regional Research	Total	Forestry Research (M-S)	Grants for: Scientific Research	Other Funds	Other Funds	Research	and Research	Scientific	Research			
New York.....	\$1,497,037	\$552,609	\$2,049,646	\$155,051	\$365,000	-	-	-	-	-	-	\$2,569,697	\$15,005,962	\$17,575,659
North Carolina.....	2,161,117	416,683	2,577,800	161,116	1,159,630	-	-	-	-	-	-	3,898,546	10,949,225	14,847,771
North Dakota.....	682,729	237,358	920,087	21,599	-	-	-	-	-	-	-	941,686	3,721,994	4,663,680
Ohio.....	1,764,059	308,363	2,072,422	94,391	258,250	-	-	-	-	-	-	2,425,063	7,492,000	9,917,063
Oklahoma.....	995,291	214,407	1,209,700	82,260	650,508	-	-	-	-	-	-	1,842,468	4,147,580	6,090,048
Oregon.....	718,335	390,107	1,108,442	173,248	75,000	-	-	-	-	-	-	1,356,690	7,633,149	8,989,839
Pennsylvania.....	1,843,468	419,488	2,264,956	127,754	30,000	-	-	-	-	-	-	2,422,710	5,105,573	7,528,283
Puerto Rico.....	1,558,843	291,249	1,850,092	-	-	-	-	-	-	-	-	1,850,092	4,568,566	6,418,658
Rhode Island.....	369,446	162,952	532,398	27,665	-	-	-	-	-	-	-	560,063	618,404	1,178,467
South Carolina.....	1,211,040	247,121	1,458,161	130,787	697,014	-	-	-	-	-	-	2,285,962	4,334,542	6,620,504
South Dakota.....	683,436	241,368	924,804	36,764	-	-	-	-	-	-	-	961,568	3,175,244	4,136,812
Tennessee.....	1,593,330	313,427	1,906,757	112,590	897,861	-	-	-	-	-	-	2,917,208	4,274,412	7,191,620
Texas.....	2,042,007	417,318	2,459,325	121,688	1,259,326	-	-	-	-	-	-	3,840,339	12,426,700	16,267,039
Utah.....	459,406	286,523	745,929	61,028	-	-	-	-	-	-	-	806,957	1,850,308	2,657,265
Vermont.....	457,053	125,029	582,082	76,193	-	-	-	-	-	-	-	658,275	780,776	1,439,051
Virginia.....	1,387,439	277,891	1,665,330	136,854	817,909	-	-	-	-	-	-	2,620,093	5,472,548	8,092,641
Washington.....	819,084	472,902	1,291,986	170,217	127,295	-	-	-	-	-	-	1,589,498	7,062,735	8,652,233
West Virginia.....	938,374	193,166	1,131,540	103,490	-	-	-	-	-	-	-	1,235,030	1,269,526	2,504,556
Wisconsin.....	1,394,598	345,153	1,739,751	118,655	91,560	-	-	-	-	-	-	1,949,966	10,270,677	12,220,643
Wyoming.....	420,363	224,222	644,585	48,896	-	-	-	-	-	-	-	693,481	2,105,698	2,799,179
Guam.....	303,009	-	303,009	-	-	-	-	-	-	-	-	303,009	56,651	359,660
Virgin Islands.....	90,000	-	90,000	-	-	-	-	-	-	-	-	90,000	-	90,000
Subtotal.....	52,198,823	14,523,671	66,722,494	4,944,000	15,400,000	-	-	-	-	-	-	87,066,494	297,914,692	384,981,186
Committee of Nine (Travel).....	-	17,820	17,820	-	-	-	-	-	-	-	-	17,820	-	17,820
Unobligated Balance.....	259,525	4,572	264,097	-	-	-	-	-	-	-	-	264,097	-	264,097
Subtotal.....	52,458,348	14,546,063	67,004,411	4,944,000	15,400,000	-	-	-	-	-	-	87,348,411	297,914,692	385,263,103
Federal Administration from:														
Hatch Funds (3%).....	-	-	1,765,312	-	-	-	-	-	-	-	-	1,765,312	-	1,765,312
Unobligated Balance.....	-	-	70,277	-	-	-	-	-	-	-	-	70,277	-	70,277
CSRS Appropriation.....	-	-	-	-	-	-	-	-	-	-	-	490,000	-	490,000
Subtotal.....	-	-	1,835,589	-	-	-	-	-	-	-	-	2,325,589	-	2,325,589
Penalty Mail.....	-	-	-	-	-	-	-	-	-	-	-	258,980	-	258,980
Unobligated Balance.....	-	-	-	-	-	-	-	-	-	-	-	5,020	-	5,020
Subtotal.....	-	-	-	-	-	-	-	-	-	-	-	264,000	-	264,000
Reserve-Unobligated Balance.....	-	-	-	-	-	-	-	-	-	-	-	1,500,000	-	1,500,000
GRAND TOTAL.....	52,458,348	14,546,063	68,000,000	6,444,000	15,400,000	754,000	-	-	-	-	-	91,438,000	297,914,692	389,352,692

Table 2

Available Funds for Cooperative State Research Service
Fiscal Years 1973, 1974 and 1975
(In dollars)

State	1973 Actual	1974 Estimate	1975 Estimate
1. <u>Payments to Agricultural</u>			
<u>experiment stations under</u>			
<u>the Hatch Act, and for</u>			
<u>Penalty Mail:</u>			
a. <u>Distributed by formula:</u>			
Alabama.....	\$1,399,506	\$1,412,845	\$1,476,347
Alaska.....	367,222	373,297	392,069
Arizona.....	494,777	500,151	525,734
Arkansas.....	1,160,076	1,171,858	1,227,948
California.....	1,421,635	1,437,213	1,511,377
Colorado.....	630,734	638,213	673,816
Connecticut.....	512,216	544,457	575,333
Delaware.....	396,096	400,298	420,305
Florida.....	850,409	861,000	911,419
Georgia.....	1,486,733	1,501,980	1,574,564
Guam.....	303,009	306,560	323,463
Hawaii.....	418,693	423,827	442,714
Idaho.....	577,600	584,696	618,399
Illinois.....	1,582,807	1,605,061	1,711,004
Indiana.....	1,410,731	1,431,308	1,529,266
Iowa.....	1,446,544	1,468,222	1,571,425
Kansas.....	968,605	982,092	1,042,297
Kentucky.....	1,562,700	1,583,645	1,676,892
Louisiana.....	1,050,602	1,061,929	1,115,853
Maine.....	551,933	557,811	585,795
Maryland.....	721,853	730,529	771,835
Massachusetts.....	646,777	654,152	689,260
Michigan.....	1,496,516	1,516,593	1,612,172
Minnesota.....	1,373,601	1,399,481	1,496,814
Mississippi.....	1,474,536	1,488,378	1,554,273
Missouri.....	1,433,463	1,451,906	1,539,707
Montana.....	550,515	557,277	589,467
Nebraska.....	876,120	887,985	944,468
Nevada.....	363,774	367,639	386,037
New Hampshire.....	437,872	442,798	465,818
New Jersey.....	627,182	634,570	669,740
New Mexico.....	515,531	521,099	547,388
New York.....	1,497,037	1,516,112	1,606,922
North Carolina.....	2,161,117	2,185,693	2,302,691
North Dakota.....	682,729	691,416	732,771
Ohio.....	1,764,059	1,787,838	1,901,041
Oklahoma.....	995,291	1,006,529	1,060,032
Oregon.....	718,335	727,119	768,935
Pennsylvania.....	1,845,468	1,868,443	1,977,821
Puerto Rico.....	1,558,843	1,575,049	1,652,200
Rhode Island.....	369,446	377,871	396,165
South Carolina.....	1,211,040	1,222,813	1,278,861
South Dakota.....	683,436	692,498	735,640
Tennessee.....	1,593,330	1,611,557	1,698,331
Texas.....	2,042,007	2,064,749	2,173,015

State		1973	1974	1975
		Actual	Estimate	Estimate
	Utah.....	459,406	464,227	487,178
	Vermont.....	457,053	471,276	496,071
	Virginia.....	1,387,439	1,402,801	1,475,935
	Virgin Islands.....	90,000	302,569	319,145
	Washington.....	819,084	829,121	876,903
	West Virginia.....	938,374	947,525	991,088
	Wisconsin.....	1,394,598	1,414,951	1,511,843
	Wyoming.....	420,363	425,001	447,081
	Subtotal.....	52,198,823	53,084,028	56,062,668
a/	b. Regional Research Funds.....	14,523,671	14,751,313	15,785,563
	Committee of Nine Travel.....	17,820	12,000	12,000
	Total agricultural research			
	under the Hatch Act.....	66,740,314	67,847,341	71,860,231
	For administration.....	1,765,312	1,861,659	1,985,769
	For penalty mail.....	258,980	395,000	302,000
	Subtotal.....	68,764,606	70,104,000	74,148,000
b/2.	Grants for cooperative forestry			
	research.....	4,944,000	6,203,000	6,349,000
3.	Contracts and grants for scientific			
	research.....	15,400,000	11,583,000	15,836,000
4.	Grants for facilities.....	- -	- -	- -
5.	Funds for rural development			
	research:			
	Research program.....	- -	1,440,000	1,440,000
	For administration.....	- -	60,000	60,000
	Subtotal, rural development.....	- -	1,500,000	1,500,000
c/6.	Federal Administration			
	Included in item 1 above.....	(1,765,312)	(1,861,659)	(1,985,769)
	Included in item 5 above.....	(- -)	(60,000)	(60,000)
	Direct appropriation.....	490,000	715,300	868,300
	Unobligated balance.....	1,839,394	- -	- -
	Subtotal, appropriated funds:	91,438,000	90,105,300	98,701,300
	Reimbursements.....	402,577	385,000	415,000
	ARS Allotment.....	9,284	- -	- -
	Trust Fund.....	5,678	8,000	8,000
	Total Available or Estimate.....	91,855,539	90,498,300	99,124,300

- a/ Allotted to States on the basis of recommendations by a committee of experiment station directors and approved by the Cooperative State Research Service.
- b/ Apportioned among the States on a basis determined by the Secretary after consultation with a national advisory board of not less than seven officials of forestry schools selected by eligible institutions.
- c/ Man-years related to all funds for CSRS staff located entirely in Washington, D.C. are as follows: 1973 - 94 man-years; 1974 - 91 man-years; 1975 - 91 man-years.

Table 3
Estimated Distribution by Research Programs of Federal Payments to
State Agricultural Experiment Stations, Schools of Forestry and
Colleges of 1890 and Tuskegee Institute
Fiscal Year 1974 (In thousands of dollars)

Natural Resources Programs	
Soil and land use	\$2,595
Water and watersheds <u>1/</u>	1,195
Environmental quality	5,156
Fish and wildlife	956
Outdoor Recreation	982
Weather	454
Remote Sensing	142
Forestry Resources Programs	
Forestry <u>2/</u>	5,884
Crop Resources Programs	
Protection from disease, insect pests and weeds <u>3/</u>	9,532
Crop varieties and production systems for dependable and efficient production	14,851
Quality improvement, quality maintenance and marketing of crops	4,091
Animal Resources Programs	
Meat animal research	7,633
Dairy research	4,011
Poultry research	3,705
Other animal research	860
Quality improvement, maintenance and marketing of animal products.....	3,825
People, Communities and Institutions Resources Programs	
Food and nutrition	3,852
Food safety	1,267
Rural development	9,607
Insects affecting man	214
Competition, Trade Adjustments and Price and Income Policy	
Farm adjustments necessary to increase farm income	1,367
Marketing and competition	4,894
Penalty Mail	395
Federal Administration	<u>2,637</u>
GRAND TOTAL	<u>90,105</u>

1/ Includes Water Pollution Research.

2/ McIntire-Stennis Funds are also included under other appropriate resource programs.

3/ Includes Activities to Reduce or Avoid the use of Pesticides.

Table 4

Distribution of Special Grant Funds Appropriated to the 1890 Land-Grant Colleges and Tuskegee Institute, FY 1974 - 1975

	<u>Fiscal Year 1974</u>	<u>Increase Fiscal Year 1975</u>	<u>Total Proposed Fiscal Year 1975</u>
ALABAMA:			
Alabama A&M Univ.	\$687,712	+\$41,792	\$729,504
Tuskegee Institute	673,203	+40,760	713,963
ARKANSAS:			
Univ. of Arkansas at Pine Bluff	588,628	+34,746	623,374
DELAWARE:			
Delaware State College	268,967	+12,015	280,982
FLORIDA:			
Florida A&M Univ.	446,199	+24,618	470,817
GEORGIA:			
Fort Valley State College	718,475	+43,980	762,455
KENTUCKY:			
Kentucky State College	735,556	+45,194	780,750
LOUISIANA:			
Southern Univ. & A&M College	537,570	+31,116	568,686
MARYLAND:			
Univ. of Maryland			
Eastern Shore	396,152	+21,059	417,211
MISSISSIPPI:			
Alcorn A&M College	712,598	+43,562	756,160
MISSOURI:			
Lincoln University	676,692	+41,009	717,701
NORTH CAROLINA:			
North Carolina A&T State Univ.	969,630	+61,839	1,031,469
OKLAHOMA:			
Langston Univ.	516,908	+29,646	546,554
SOUTH CAROLINA:			
South Carolina State College	600,014	+35,556	635,570
TENNESSEE:			
Tennessee A&I State Univ.	747,861	+46,069	793,930
TEXAS:			
Prairie View A&M College	939,326	+59,684	999,010
VIRGINIA:			
Virginia State College	667,509	+40,355	707,864
TOTAL	\$10,883,000	+\$653,000	\$11,536,000

Selected Examples of Recent Progress: Recent accomplishments under this appropriation are cited below:

Natural Resources

Utilization of Whey Proteins

About 22 billion pounds of whey, a by-product of cheese making, must be disposed of annually in the United States. Since whey is about 92 percent water it is expensive to handle. Because the biological oxygen demand of whey is especially high it overloads disposal systems if disposed as sewage. A novel approach, which can be implemented by small cheese manufacturing plants, is to convert whey to yeast proteins and fats. The process is being developed by Oklahoma Agricultural Experiment Station scientists. By using more than one strain of yeast, scientists can convert 80-98 percent of all the biodegradable material in the whey into yeast cells which can be dried and used for nutritious animal feed. If successful, the process will provide a method for small plants to change whey from an expensive pollutant to a valuable by-product.

Poultry Waste Utilization

Researchers at Michigan State University have shown that dried poultry waste has value as a protein source in animal feeds. Poultry waste is dried to facilitate storage and shipment. Ruminants such as cattle and sheep harbor microorganisms that utilize ammonia to produce microbial protein which can be digested by the animal. The dried poultry waste contains large amounts of uric acid which is slowly converted to ammonia in the rumen. If poultry waste is approved for use as an animal feed it will become a nutrient of value rather than a waste product or environmental pollutant that must be disposed of at considerable expense.

Solid Waste Disposal in Forests

Florida scientists have experimented with disposing of ground garbage on a flatwoods forest planting. Forests are ideally suited for solid waste disposal because their products are not for human consumption, they are near municipalities but where population densities are low, and ample time is available for slow breakdown of bulk disposals. This research showed that as much as 200 tons could be disposed of on each reforested acre without harm to tree growth but rather with substantial improvement in growth. Results to date indicate that this disposal does not harm the environment.

Role of Taxation in Management of Solid Waste

Studies in Indiana are filling the gaps in economic information for decision-making on solid waste disposal. Alternatives for handling wastes were assessed. Sanitary land fill costs on a dollar-per-ton basis were estimated for the State. Costs of collection and of disposing of package waste for particular products have been determined. Estimates have been derived of the effects of disposal sites on property values of the surrounding and downwind property. Taxation is shown to be a useful policy tool for placing the costs of disposal on those that generate the waste. These studies are providing decision makers with the facts they need to manage waste disposal more effectively.

Lake Recreation Pays Handsome Dividends

Resource economists at the Oklahoma Agricultural Experiment Station researched the income-drawing power of Lake Tenkiller and found that direct benefits to the local economy of Cherokee and Sequoyah Counties were \$8,500,000 for the one year.

These expenditures by recreationists resulted in local increased output of goods and services of \$14,400,000 because of the "multiplier" effect. What this means is that for every dollar spent for recreation goods and services around the lake, another 69% was generated in output in other sectors of the economy. The study also showed that recreation had increased wages and salaries by \$2,800,000. A total of 630 persons were employed locally in recreation and related industries and 214 new jobs were opened up in other sectors such as service stations, restaurants, stores, etc.

Forest Resources

Pine Plantation Fertilization

Research at the Florida Agricultural Experiment Station shows that fertilizer treatments increased growth in more than 60 percent of Florida pine stands. There was no indication of a detrimental effect on wood quality by rapid growth. As a result of this work, the practice of fertilizing pine plantations has increased sharply in the South. In the past year over 200,000 acres were fertilized, an increase of 100 percent from two years ago.

Aspen Construction Material

A manufacturing plant in Cloquet, Minnesota employs 50 people to process 40 million board feet of aspen 2 x 4's for use in home construction each year. A McIntire-Stennis Cooperative Forestry Research project at the University of Minnesota produced the information necessary to bring this employment opportunity and construction material availability into being. Minnesota wood scientists developed the necessary information on resource availability, aspen wood properties that relate to this use, marketability of the product, and manufacturing facilities design.

Tree Bark Utilization

Tree bark research carried out by the University of California has clearly indicated that potential substandard properties of bark board can be avoided by using a board design of three layers. Bark is employed as a core material between layers of resin-bonded wood particles. The 3-layered bark core board has good strength properties as well as low lateral movement compared to commercial particle board. Bark makes up approximately 10 percent of the volume of logs harvested for lumber, plywood, and pulp and causes environmental quality problems.

Hybrid Poplar Improvement

Research in Wisconsin on hybrid poplar indicates 2-fold growth gains in the first year by using disease-free planting stock. Scientists have produced disease-free tissue for propagation from sterilized poplar tips less than 1/2 millimeter in length in chemically controlled culture bottles. A projection of these early results means a growth rate of 5 cords per acre per year in a 12-year rotation period. Present production rates in hybrid poplar average only one-half that amount and after one rotation serious decline occurs. Well-managed native aspen stands produce only one cord per acre per year with a 40-year rotation. Realization of the ultimate potential in wood fiber production improvement for Wisconsin alone could mean freeing up to 4 million acres for uses other than wood production, reduce wood transportation costs, and more efficient wood supply management.

Land Use Classification Development

A computer program (LANDUSE) has been developed by Michigan State University for processing data on site characteristics to assign a suitability index for each of four land uses. An outdoor recreational land use selection model has been developed to assist planners in locating camping facility sites. The results of this work are particularly useful to public planners at the county levels. Special interest has been expressed by county officials of New York as well as of Michigan in the opportunity to maximize tax returns from county lands by decisions made using this model for analysis.

Crop Resources

Pheromones

Entomologists at the Ohio Agricultural Research and Development Center have recently discovered sex pheromones in lilac and ash borers, insects that attack various ornamental trees and shrubs. Organic chemists in other states are attempting to identify and synthesize the sex pheromones. Pheromone traps are used to determine the most effective time to spray or as a trapping method to suppress borer populations.

Attractant Baits

Researchers at the California Agricultural Experiment Station have developed a bait formulation containing attractants against noxious and disease carrying flies such as eye gnats, house flies, and blow flies. The attractant when mixed with standard fly killing toxicants has shown considerable promise for suppressing pest fly populations. Among flies which are controlled with this new attractant bait, the eye gnat poses a serious nuisance problem affecting quality of living in heavily infested recreational developments in southern California and in the southern part of the United States. Eye gnats may also transmit some diseases.

Victory Over Pear Decline

Pear trees in California now have more than a fighting chance for survival. Plant pathologists at the University of California-Davis have developed, together with other scientists, a cure for pear decline, a disease which devastated the States's pear industry. Since its initial outbreaks in 1959, pear decline has destroyed 1.2 million trees; and though the industry has made a spectacular comeback since those days, about 20 percent of the 2 million old pear trees that bear fruit continue to suffer from lesser effects of the disease. Now these trees, too, will prosper fully, after they receive transfusions of the cure--oxytetracycline. Not only does oxytetracycline leave no residue, but it may also help to combat "western X" disease in peaches and "buckskin" disease in sweet cherries.

Simplified Method Discovered for Screening Herbicides

Plant physiologists at the Nebraska Experiment Station have discovered a quick, simple method of screening chemicals for herbicidal activity. The method was discovered while seeking ways to increase the protein content of wheat. It was found that, as a general rule, chemicals that have potential herbicidal activity cause plants to generate sufficient nitrites to kill themselves. Chemicals that are non-toxic allow the nitrites to accumulate only briefly after which it is rapidly converted to a different form of nitrogen or protein form and disappears.

Plant Resistance to Pests

Research at the Louisiana Agricultural Experiment Station on plant resistance to boll weevil and other pests indicates that Frego Bract cotton produced 30,000 more squares per acre than normal commercial cotton grown under similar conditions. The number of boll weevil-damaged squares per acre was 90 fold lower than normal cotton during the first half of the growing season. The

susceptibility of Frego Bract to Lygus bug damage, however, is presently a problem. Studies on the effects of leaf canopy on the micro climate and immature boll weevil mortality indicate that mortality averages 13 and 26 percent higher under the okra leaf and super okra leaf canopy respectively than under normal leaf canopies. Studies on trap crops indicate that the placement within a field and the number and size of trap crops is critical for boll weevil suppression. The interaction of trap crops and the non-preference Frego Bract character demonstrates considerable promise.

New Insights in Corn Stunting Disease Complex

Plant pathologists at the Ohio Agricultural Research and Development Center, collaborating with scientists at the Kentucky Agricultural Experiment Station, have discovered a virus component that plays an important role in the corn stunt complex. This discovery greatly improves breeding and selection efforts aimed at identifying superior stunting and dwarfing resistance in breeding new corn hybrids.

Systemic Fungicide Controls Barley Stripe Disease

Use of methyl mercury fungicides as seed treatments gave adequate control of barley stripe, but with the banning of these materials, ominous increases in this disease occurred. Plant pathologists at the Kansas Agricultural Experiment Station showed that a new-systemic fungicide, carboxin, gave excellent control. Extensive seed treatment using this chemical is underway, greatly reducing the impact of this major barley disease.

Biological Control of a Rice Field Weed Pest by an Endemic Fungal Disease

Northern jointvetch has been a major weed pest in southern rice production for many years. Plant pathologists at the Arkansas Agricultural Experiment Station have shown that spray application of spores of a fungus naturally occurring on jointvetch gives better control than chemical herbicides in rice production fields. Several years of testing indicate no adverse environmental impacts by use of this disease agent.

New Cotton Variety

The Texas Agricultural Experiment Station recently released a new cotton variety, Tamcot SP-37. The new variety has multiple disease resistance and will contribute to more consistent good yields of cotton. It has had tremendous acceptance by cotton producers and will make a major contribution to cotton production in Texas.

New Potato Variety

Hudson is a new potato variety released this year by the New York State Agricultural Experiment Station following many years of research. Hudson yields considerably higher than the standard varieties and has natural resistance to the golden nematode. It offers more quality for consumers because it tends to darken less after cooking and has a higher dry-matter content than the most popular current variety.

Leaf Proteins

Research at the Wisconsin Agricultural Experiment Station is pointing the way to saving time and eliminating losses in harvesting forages and to providing a new source of plant proteins for use by all livestock, poultry, pets and humans. The new harvesting process involves mechanical dewatering using new engineering concepts that reduce energy input. Dewatered forage residue is ensiled to produce excellent quality feed for ruminant livestock while the expressed juices are processed to extract the proteins. Preliminary results indicated that mechanical dewatering of alfalfa in Wisconsin can provide up to 500 pounds of leaf protein per acre with no decrease in livestock feed value of the crop as compared with the conventional haylage making processes. Leaf proteins have exceptionally high biological value being about equal to milk or meat protein.

Improving Nutritive Quality of Peanuts

Oklahoma Agricultural Experiment Station biochemists have developed an improved technique for the rapid amino-acid analysis of peanuts. The new testing procedure speeds up the search for better varieties of peanuts--rich in nutritional value. Food must supply essential amino acids for the building of proteins that make up body tissue. Studies of the amino acid composition of 16 varieties of peanuts showed a two-fold variation in the limiting essential amino acids - lysine, methionine, isoleucine, and threonine - listed among the varieties tested. This study showed that genetic selection offers a great potential for the developing peanut plants with improved protein quality.

New Method of Peeling Tomatoes

Scientists at the California Agricultural Experiment Station compared the commercial feasibility of the "freeze-heat" method for tomato skin removal to existing lye-peeling methods. Commercially machine-harvested tomatoes were spray frozen from five to ten seconds, conveyed through 190 degrees fahrenheit water bath for from 15 to 20 seconds, passed over imbedded knife edges to split skins and then fed to scrubbers. Skins were collected and dried as a by-product. As compared to lye peeling, the "freeze-heat" method gave increased yields and better quality as judged by USDA standards. Elimination of waste water, absence of lye and chemical contaminants are of environmental significance.

Animal Resources

Vaccine for Calf Diarrhea

Nebraska research has led to the Federal licensing and general availability of a vaccine which can prevent a high proportion of calf deaths due to calf diarrhea. Producers with affected herds will now be able to effectively intervene through a specific vaccination program. The Nebraska workers have isolated additional viral causes of calf diarrhea and, when adequately identified, plan to test additional specific vaccines. Not all herds in which calf diarrhea problems occur are harboring the virus against which the newly approved vaccine is effective.

Transmission of Bovine Leukemia

Further proof of the infectious nature of bovine leukemia has now been obtained by Wisconsin, following the initial work of its scientists in recovering a C-type

virus from cattle affected with this disease. Virus from leukemic cattle inoculated into lambs has resulted in transmission of the virus and occurrence of disease similar to natural and experimental cases seen in cattle. C-type viruses are known to cause leukemia in other animals and have been suspected of being associated with certain types of leukemia in man. There is no evidence at this time that human leukemia is associated with that of cattle; however, further studies are needed to insure that man is not affected in any way by the bovine leukemia virus.

Development of a Preventative for Feedlot Bloat

Scientists at the Kansas Agricultural Experiment Station have developed a quaternary ammonium compound that is highly effective (100% effective is claimed) in preventing the formation of stable froth in the rumens of cattle fed high concentrate rations. Bloat is due to the inability of animals to eliminate gases trapped in such froth. A Kansas survey revealed death losses from bloat in feedlot cattle to exceed \$1,000,000 in Kansas alone.

Reducing Protein Costs for Feedlot Cattle

Scientists at the Ohio Agricultural Research and Development Center have shown that supplemental protein is not necessary for finishing feedlot cattle after they reach a weight of 750 lbs. when fed corn and corn silage. Potential savings in feed costs from this finding are in excess of \$3 million annually.

Milk Production in Cattle Without Pregnancy

Dairy scientists at the Ohio Agricultural Research and Development Center have successfully field tested a technique that uses a combination of natural hormones to induce milk production in non-pregnant cattle. The 1972 tests achieved 79 percent success. The 38 cows in which lactation was induced produced an average of 30 pounds of milk per day, 9,250 pounds for the 305-day lactation period. If this experimental technique is approved for general use through licensed veterinarians, its costs (\$7-10 per cow) should be within the reach of every dairy producer. Though bearing a calf is the best way for a cow to begin milk production, the hormone treatment may provide the means to save high milk producing cows with reproductive problems.

People, Communities and Institutions

Industry Adds Income to Local Community

A feasibility study in Oregon relative to the establishment of an aluminum plant in a local community shows an addition of \$6,000,000 in annual payroll, \$8,288,000 spent for locally provided goods and services, and \$1,427,000 to local government in taxes. The study enabled community leaders to answer questions regarding benefits as against disbenefits; specific effects to be felt in the local economy; and, changes needed to offset or to complement the effects expected from an additional industry.

Low Income Families Rate Home Ownership Very Highly

Research at the Texas Station for improving or providing more adequate housing for lower income people points up the importance of understanding them as people with needs and desires similar to those of other economic groups. Findings show that the economic status provided by home ownership contributes much to self esteem, to a man's capacity for happiness, and to his ability to contribute to society. Low income people often are willing to forego conveniences for higher priority factors such as ownership and location. These findings can be very helpful to agencies and programs concerned with providing housing for the disadvantaged.

Quality of Housing Influences Human Behavior and Performance

Scientists at the University of Arkansas at Pine Bluff have determined that the type and quality of housing of young people influences personality traits, and human behavior. These unique results provide new insights for the evaluation of public housing programs. The benefits of adequate housing in terms of improved human performance should be useful to Legislators at both the National and State level in justifying public housing legislation and financial support.

Nutritional Health of Rural School Children Inadequate

A study of the nutritional health of rural school children in North Carolina by scientists at North Carolina A&T State University revealed that 14 percent of the children studied were undernourished and 19 percent were obese. Study of the diets of the children revealed that, when compared to reference standards, 83 percent of the diets met the requirements for meat while only 26 percent met them for citrus fruit; 36 percent met them for other fruit and non-leafy vegetables; 3 percent met them for dairy products; and none met the requirements for leafy vegetables. These results will help provide impetus for nutritionists and nutrition policy makers to develop programs to eliminate nutritional problems of growing children in rural areas.

Procedure Developed for Simultaneous Study of Basic Human Needs

Researchers at Alcorn A&M College investigating basic human needs in rural development have collected benchmark data on food, clothing and housing status in a 1,000 household sample of the low-income rural area of Clairborne County, Mississippi. The simultaneous effort in these 3 areas of need has (1) confirmed that a combined study of multiple needs reveals coincident factors that may be masked in isolated studies; (2) developed a procedure for rapid accumulation of data practical for large population samplings; and (3) provided guidelines for applying the approach to other communities. This research has inference for existing and new public assistance programs and other community services.

Feeder-Pig Model Developed for Low Income Families

Researchers at South Carolina State College have developed a feeder-pig enterprise model which permits determination of labor, capital and management requirements necessary for profitable labor income from feeder-pig projects. The model grew out of a study designed to determine the feasibility of growing feeder-pigs to supplement the income of low income rural families in South Carolina. More than two hundred families in ten counties were involved in the study.

Food Habits of Low-Income Families Characterized

A study of the eating habits and dietary patterns of low-income families in two counties of western Tennessee by researchers at Tennessee State University revealed that many families made poor food choices which in turn led to inadequate diets and poor use of available resources. The poor condition of the teeth, especially in children and elderly; obesity in adult women; and the general health status of older adults indicated that malnutrition was a problem. Wide variations in acceptance of certain foods were identified and these likes and dislikes were, at times, associated with problems in meeting the vitamin A, iron and calcium requirements. The need for assistance in purchasing foods, budgeting and in food preparation was also evident. The study also demonstrated a need for improved nutrition education programs and appropriate followup for best results.

Competition, Trade Adjustments and Price and Income Policy

Computer Model Developed for Reducing Delivery Costs

The Kansas Station has developed and tested a scientific truck routing procedure which they have named Lockset. In the past, the routing of delivery trucks had been left mostly to intuition and crude mathematics to cost out route alternatives. The result was often excessive trucking costs. Substantial savings have been achieved by applying the Lockset System, a computerized system, to particular delivery route problems of marketing firms.

Computer Simulation Model to Aid in Decision Making in Broiler Industry

A Northeastern poultry marketing project (NEM-39) succeeded in developing a mathematical simulation model to aid in decision-making in the broiler industry. A computer run of the model can answer such questions as: (1) What is the optimal production level and input pattern for firms in each supply region under the various conditions of seasonal demand? (2) How should the shipment of Northeastern broilers be spread among alternative markets to maximize returns? (3) What effect would disappearance of the premium paid for heavy broilers in the New York market area have on the broiler industry? (4) What would be the effect of a regional increase in the transportation cost for dressed broilers? and (5) What would be the effect of a feed price increase on the various competing regions?

Need for Public Campground Policy

Researchers cooperating on a regional project in the Northeast examined existing policies of public agencies having management and marketing responsibility for campgrounds. Findings show that most agencies do not provide adequate policy guidelines to meet specific campground administrative problems, and campground policy in the public sector is in need of more precise definition and policy particularly since camping is now considered a marketable commodity. The matter of establishing fees, development of convenience facilities, setting of minimum reservation periods, maximum length of stay, number of campers in an area, amount of supervision and degree to which public campgrounds should be subsidized are areas which the research shows are in need of critical examination and clarification.

EXTENSION SERVICE

Purpose Statement

Cooperative agricultural extension work was established by the Smith-Lever Act of May 8, 1914, as amended. The legislation authorizes the Department of Agriculture to give, through the Land-Grant Colleges, instruction and practical demonstrations in agriculture and home economics and related subjects and to encourage the application of such information by means of demonstrations, publications, and otherwise to persons not attending or resident in the colleges. Extension educational work is also authorized under the Agricultural Marketing Act of 1946 and the Rural Development Act of 1972.

The basic job of the Cooperative Extension Service is to help people identify and solve their farm, home, and community problems through use of research findings of the Department of Agriculture and the State Land-Grant Colleges, and programs administered by the Department of Agriculture.

State and county extension work is financed from Federal, State, County, and local sources. These funds are used within the States for the employment of county agents, home economics agents, 4-H Club agents, State and area specialists, and others who conduct the joint educational programs adapted to local problems and conditions.

The Extension Service, as a partner in the cooperative effort, has three major functions:

1. Serves as liaison between the Department of Agriculture and the State extension services, provides program leadership and assistance to the States in the conduct of Extension work.
2. Administers Federal laws authorizing Extension work and coordinates the work among the States.
3. Provides leadership for the educational phases of all programs under the jurisdiction of the Department.

This work is carried out through State and County Extension offices in each State, Puerto Rico, Guam, the Virgin Islands, and the District of Columbia. The program is coordinated by an Extension Service staff of Federal employees located in Washington, D. C. In addition, the Extension Service has a marketing specialist located at Clemson, South Carolina, to provide special emphasis on cotton utilization and a cotton ginning and mechanization specialist located at Memphis, Tennessee.

Available Funds and Man-Years
1973 and Estimated, 1974 and 1975

	Actual 1973		Estimated Available 1974		Budget Estimate 1975	
	Amount	Man- Years	Amount	Man- Years	Amount	Man- Years
Extension Service.....	\$194,331,000	: 212	\$204,073,000	: 204	\$208,063,000	: 202
Salaries and expenses:						
- Farmers Home						
Administration.....	88,400	: - -	100,000	: - -	- -	: - -
Resource Conservation:						
and Development,						
Soil Conservation						
Service (program						
information).....	382,000	: - -	256,000	: - -	296,000	: - -
Total, USDA funds....	194,801,400	: 212	204,429,000	: 204	208,359,000	: 202
Other than USDA funds:						
Federal.....	1,848,753	: 28	729,153	: 17	472,824	: 8
Non-Federal.....	60,946	: - -	78,000	: - -	78,000	: - -
Total, other than						
USDA funds.....	1,909,699	: 28	807,153	: 17	550,824	: 8
Total Available or						
Estimate, Extension:						
Service.....	\$196,711,099	: 240	\$205,236,153	: 221	\$208,909,824	: 210
End-of-Year						
Employment:						
Permanent full-						
time.....	219		195		195	
Other.....	12		12		12	
Total, end-of-year						
employment.....	231		207		207	

EXTENSION SERVICE

Appropriation Act, 1974	\$204,073,000
Budget Estimate, 1975	208,063,000
Increase in Appropriation	+3,990,000

SUMMARY OF INCREASES AND DECREASES
(On basis of adjusted appropriation)

	<u>1974</u>	<u>Increase or Decrease</u>	<u>1975 Estimate</u>
Payments for Cooperative Agricultural Extension work:			
Cooperative Extension work under section 3(b) and 3(c) of the Smith-Lever Act (including 4% Federal Administration).....	\$109,806,000	+\$7,615,000	\$117,421,000
For Retirement and Employees' Compensation Fund Costs.....	13,552,000	+850,000	14,402,000
Penalty Mail.....	14,359,000	-4,463,000	9,896,000
For Nutrition Education Program.....	50,252,000 ^{a/}	-2,892,000	47,360,000
For 1890 Land-Grant Colleges and Tuskegee Institute.....	6,000,000	+260,000	6,260,000
For Pest Management.....	500,000	+1,180,000	1,680,000
For Farm Safety.....	- -	+1,020,000	1,020,000
For the District of Columbia (including Federal Administration).	800,000	+35,000	835,000
GSA Space rental costs.....	- -	+332,200	332,200
Annualization of Pay Cost Increase effective in fiscal year 1974.....	308,000	+52,800	360,800
All other.....	8,496,000	- -	8,496,000
Total Available.....	\$204,073,000	+\$3,990,000	\$208,063,000

^{a/} Excludes proposed transfer of \$308,000 to Federal Administration and Coordination for fiscal year 1974 pay costs.

PROJECT STATEMENT
(On basis of adjusted appropriation)

Project	:	1974	:	Increase or	:	1975
	:	1973	:	Decrease	:	(Estimated)
1. Payments to States, Puerto Rico, Guam, and the Virgin Islands:	:	:	:	:	:	:
(a) Cooperative Agricultural Extension Work under Sections 3(b) and 3(c) of Smith-Lever Act:	:	:	:	:	:	:
(1) Program.....	:	\$104,719,118	:	\$107,854,560	:	+\$7,310,400
(2) Set aside for Federal Administration (4%).....	:	1,857,240	:	1,951,440	:	+304,600
Total.....	:	106,576,358	:	109,806,000	:	+7,615,000(1)
(b) Retirement and employees' compensation fund costs for extension agents.....	:	13,519,224	:	13,552,000	:	+850,000(2)
(c) Penalty Mail for Extension Agents and Extension Directors.....	:	7,617,000	:	14,359,000	:	-4,463,000(3)
Subtotal.....	:	127,712,582	:	137,717,000	:	+4,002,000
	:		:		:	141,719,000

Project	1973	1974 (Estimated)	Increase or Decrease	1975 (Estimated)
(d) Payments under Section 3(d) of Smith-Lever Act:				
(1) Nutrition and Family education program.....	48,560,000	50,252,000	-2,892,000(4)	47,360,000
(2) Grants to 1890 Land-Grant Colleges and Tuskegee Institute.....	5,972,125	6,000,000	+260,000(5)	6,260,000
(3) Rural Development.....	1,000,000	1,000,000	- -	1,000,000
(4) Pest Management.....	500,000	500,000	+1,180,000(6)	1,680,000
(5) Farm Safety.....	- -	- -	+1,020,000(7)	1,020,000
Subtotal.....	56,032,125	57,752,000	-432,000	57,320,000
(e) Cooperative Marketing Extension Work under the Agricultural Marketing Act.....	1,449,951	1,450,000	- -	1,450,000
(f) Cooperative Extension Work in the District of Columbia:				
(1) Program.....	768,000	768,000	+33,600	801,600
(2) Set aside for Federal Administration (4%)....	32,000	32,000	+1,400	33,400
Total.....	800,000	800,000	+35,000(8)	835,000
(g) Extension Education Program under Rural Development Act, Title V:				
(1) Program.....	- -	1,440,000	- -	1,440,000
(2) Set aside for Federal Administration (4%)....	- -	60,000	- -	60,000
Total.....	- -	1,500,000	- -	1,500,000
Total, Payments to States, Puerto Rico, Guam, and the Virgin Islands.....	185,994,658	199,219,000	+3,605,000	202,824,000
2. Federal Administration and Coordination (Direct appropriation).....	4,528,540	4,854,000	+385,000(9)	5,239,000
Unobligated Balance.....	807,802	- -	- -	- -
Total Available or Estimate....	191,331,000	\$204,073,000	\$+3,990,000	\$208,063,000
Funds placed in reserve for savings.....	3,000,000			
Total, appropriation.....	\$194,331,000			

EXPLANATION OF PROGRAM

Funds appropriated to the Extension Service are authorized under the Smith-Lever Act of May 8, 1914, as amended; the Agricultural Marketing Act of 1946; and the Rural Development Act of 1972. This legislation authorizes the Department of Agriculture to give, through the land-grant colleges, instructions of practical demonstrations to persons not attending or resident in the colleges. The first Morrill Act of 1862 provided for the establishment and maintenance of at least one college in each state to give practical knowledge related to agriculture. The second Morrill Act of 1890 broadened the financial support for the land-grant colleges. The Cooperative Extension work is housed administratively at these high institutions of learning with outreach offices in every area and county throughout each state. The major agricultural extension programs include:

Agriculture and Natural Resources. Approximately 38 percent of the total professional man-years undertaken for Cooperative Extension work in 1973 was used for this program. This program faces many challenges to improve the agricultural programs which are designed to:

-- Strengthen the independent family farm.

- Increase net income for farmers at the marketplace.
- Improve agricultural production and marketing systems.
- Use tools to improve decision making.
- Adjust to new environment standards.
- Expand pest management programs.
- Improve economic understanding.
- Reduce farm accidents and hazards through the introduction of the farm safety program.

Community Resource Development. This program is devoted primarily to helping people give group consideration to community problems. Approximately nine percent of the total professional man-years undertaken for Cooperative Extension work was used for community development.

4-H Youth Program. This program is continually developed to serve more effectively the needs of today's youth. Programs are being expanded as a prime target to reach more youth wherever they live and whatever their socio-economic background. Currently, 27 percent of the youth reached through these programs belong to the minority ethnic and racial groups. Approximately 32 percent of the total professional man-years undertaken for Cooperative Extension work in 1973 was used for 4-H type programs.

Home Economics. Home Economists continue to assist people identify their needs, improve the quality of their homes, their community, and their futures. Special effort is directed to low-income families, racial minorities, the handicapped, the elderly, and young families with the Expanded Food and Nutrition Education Programs in full operation. Approximately 21 percent of the total professional man-years undertaken for Cooperative Extension work in 1973 was used in continuing this program. (For additional information on the formula distribution and on State and local funding, see page 155 following.)

JUSTIFICATION OF INCREASES AND DECREASES

- (1) An increase of \$7,615,000 for increased costs of operations in the States consisting of:

- (a) An increase of \$7,310,400 for payments to States under Section 3(c) of the Smith-Lever Act (\$107,854,560 available in 1974).

Need for increase: State and county extension agents' salaries and expenses are financed from Federal, State, and county funds. The employment and retention of qualified and effective staff is dependent upon the increase to provide competitive salaries and related costs. This request would provide State and County Extension personnel with salary increases comparable to the percentage increase granted Federal employees in January 1972 (5.5%) and January 1973 (5.14%). These percentages, when applied to the estimated costs of personal services of \$90,143,000 for fiscal year 1973 (approximately 85 percent of Federal funds are used for salaries) offset by the increase of \$2,260,800 provided in the 1974 Appropriation Act, represent the requested increase. The employment and retention of qualified and effective staff is dependent upon this request to provide competitive salaries and in reducing personnel turnover.

Plan of work: These funds would be allocated to the States on the Smith-Lever formula, Section 3(c).

- (b) An increase of \$304,600 for Federal Administration and Coordination (\$1,951,440 available in 1974).

Plan of work: Under Section 3(c) of the Smith-Lever Act, four percent of increases in appropriations after 1962 are allocated for administration, technical and other services, and for coordinating Extension work. The increase of \$304,600 is needed for financing pilot projects in selected areas, development

of materials for national use, and evaluation of ongoing programs. This increase will not be used for additional staff for the Extension Service.

- (2) An increase of \$850,000 for retirement and employees' compensation costs for extension agents (\$13,552,000 available in 1974).

Need for increase: Cooperative extension agents are joint employees of the United States Department of Agriculture and the cooperating land-grant institutions. They hold appointments under Civil Service Commission Regulation A-6, III(a)(1). Such appointments place them under the provisions of the United States Civil Service Retirement Act, with employee contributions and benefits based on total salary received from the cooperating partners. The employer's contribution to the Federal Retirement Fund, to match contributions of these agents, is provided by Federal appropriation to the Extension Service.

Plan of work: The \$850,000 increase requested will provide the additional funds necessary to match the increasing contributions of the cooperative extension agents resulting from salary increases provided these agents. These funds also include an additional \$5,874 needed to reimburse the Department of Labor Employees' compensation fund for costs incurred for extension agents receiving compensation benefits under the U. S. Employees' Compensation Act. \$238,944 is currently available for these costs.

- (3) A decrease of \$4,463,000 for penalty mail costs. (\$14,359,000 available in 1974).

Need for decrease: Funds available for penalty mail costs cover the cost of mailings of State Extension Directors and Cooperative Extension Agents. The fiscal year 1974 appropriation provided funds to reimburse the Postal Service for non-recurring costs owed the Postal Service for fiscal years 1972 (\$2,184,000) and 1973 (\$2,279,000) resulting from a rate increase subsequent to the 1973 budget request.

- (4) A decrease of \$2,892,000 for payments to States for the Nutrition and Family Education program. (\$50,252,000 available in 1974).

Plan of work: The nutrition and family education program will serve approximately 320,000 families during fiscal year 1975. Since its inception in 1969, a total of about 900,000 low-income families have received assistance as of June 30, 1973, resulting in a beneficial impact on family diets. Funding from State and local sources for this program totaled \$27 million between 1970 and 1973, as follows: 1970, \$5.9 million; 1971, \$7.3 million; 1972, \$6.8 million; and 1973, \$7.2 million.

- (5) An increase of \$260,000 for grants to the 1890 Land-Grant Colleges and Tuskegee Institute (\$6,000,000 available in 1974).

Need for increase: State and county extension agents salaries and expenses are financed from Federal, State, and county funds. The employment and retention of qualified and effective staff is dependent upon the increase to provide competitive salaries and related costs.

Plan of work: The increased funds would provide state and county extension employees at the 1890 Land-Grant Institutions and Tuskegee Institute with salary increases comparable to the percentage increase granted federal employees in January 1973.

These funds would be allocated under Section 3(d) of the Smith-Lever Act as indicated on Table 1B.

- (6) An increase of \$1,180,000 for pest management programs (\$500,000 available in 1974).

Need for increase: Success of the Extension pilot pest management programs indicate that plans should be made for expansion to additional crops in fiscal year 1975.

During fiscal year 1974, 39 projects on pest management will be in operation in 29 states involving 15 crops. These include 14 three-year pilot cotton pest management programs initiated in fiscal year 1972 with non-recurring funds contributed by the Extension Service and the Animal and Plant Health Inspection Service. These projects will terminate during fiscal year 1975. In addition, a total of 25 three-year pilot projects initiated in fiscal years 1972 and 1973 are being continued during 1974.

Plan of work: In fiscal year 1975, \$800,000 of the proposed increase of \$1,180,000 will be used to initiate eight additional integrated pest management pilot projects dealing with multiple pests and multiple crops. The balance of the increase, \$380,000, will be used to expand ongoing projects to new areas.

- (7) An increase of \$1,020,000 for farm safety programs (-0- available in 1974).

Need for Increase: The National Safety Council estimates that losses to farm residents from accidents and fire amount to about two billion dollars annually. Approximately 6,900 deaths resulting from accidents and about 600,000 disability injuries are recorded annually.

The accident rate on farms has increased 16 percent in the last 10 years while the rate in other industries has decreased. Farming is now the third most hazardous occupation, following mining and construction.

Throughout the Nation there is greater emphasis on safety. The Occupational Safety and Health Act and the Hazardous Occupation Order issued by the Department of Labor have resulted in the need for expanded Extension efforts to help farmers meet new Federal regulations and to help farmers reduce accidents.

The objectives of this program are:

- (1) Initiate and conduct a nationwide farm safety education program for farm families and their employees, starting in fiscal year 1975.
- (2) Provide a means for gathering and interpreting data to determine the nature and extent of farm accidents as a guide for the conduct of educational programs.
- (3) Provide farmers with information about laws and regulations relating to farm safety and accidents.

Plan of work: A total of \$1,020,000 is requested to develop a farm safety educational program to start in fiscal year 1975. These funds will be distributed under Section 3(d) of the Smith-Lever Act.

The Extension Service of each State and Puerto Rico will receive \$20,000 to support a farm safety program, to be carried out through agricultural specialists and county agents in each state. It would also provide for close cooperative relations and joint effort with the agricultural industry, farm organizations, local, state, and federal agencies, and other professional groups concerned with farm safety.

- (8) An increase of \$35,000 for Extension work in the District of Columbia (\$800,000 available in 1974).

Need for increase: District of Columbia Extension personnel salaries and expenses are financed from Federal funds. The employment and retention of qualified and effective staff is dependent upon the increase to provide competitive salaries and related costs.

Plan of work: The additional funds would provide District of Columbia Extension personnel with salary increases comparable to the percentage increase granted federal employees in January 1973.

As authorized by section 109 of the District of Columbia Public Education Act, as amended by the Act of June 20, 1968, four percent of the increase (amounting to \$1,400) shall be allotted to the Extension Service for administering and coordinating the work.

- (9) An increase of \$385,000 for Federal Administration and Coordination (\$4,854,000 available in 1974).

GSA Space Rental Costs \$+332,200

Annualization of pay cost increases
effective in fiscal year 1974 \$+52,800

* * * * *

The following table summarizes the total funds available for Federal Administration for the Extension Service:

	<u>FY 1973</u>	<u>FY 1974</u>	<u>Increase or Decrease</u>	<u>FY 1975 Estimate</u>
Set aside (4% of funds appropriated under Section 3(b) and 3(c) of Smith-Lever Act).....	\$1,857,240	\$1,951,440	\$+304,600	\$2,256,040
Set aside (4% of funds for payments to District of Columbia)...	32,000	32,000	+1,400	33,400
Set aside (4% of funds for Rural Development, Title V).....	- -	60,000	- -	60,000
Direct appropriation.....	4,585,400	4,854,000	+385,000	5,239,000
Total.....	<u>\$6,474,640</u>	<u>\$6,897,440</u>	<u>\$+691,000</u>	<u>\$7,588,440</u>

PAYMENTS TO STATES, PUERTO RICO, GUAM, AND THE VIRGIN ISLANDS

Federal funds available for fiscal year 1974 under the appropriation "Payments to States, Puerto Rico, Guam, and the Virgin Islands" for cooperative agricultural extension work under the Smith-Lever Act, the Agricultural Marketing Act, the D. C. Public Education Act, the Rural Development Act of 1972 Title V, Retirement and Employees' Compensation fund costs, and Penalty Mail total \$199,219,000. Funds available for fiscal year 1975 are estimated at \$202,824,000.

Payments to the States, Puerto Rico, Guam, and the Virgin Islands are made directly to designated offices and the funds are disbursed by them in accordance with budgets and programs of work submitted by the State directors of Extension work and approved

by the Administrator of the Extension Service on behalf of the Secretary of Agriculture. As reflected in Table III, about 41 percent of the cost of Extension work at present is being financed from Federal sources and about 59 percent from State and local sources.

The funds are used by the States for the employment of Extension workers to carry on Cooperative Agricultural Extension work. Paid Extension workers are assisted by volunteer leaders who cooperate in carrying out Extension programs.

The use of these funds is indicated in greater detail in the following tables: Table 1 reflects estimated allotments to the States, Puerto Rico, Guam, and the Virgin Islands under the formula provisions of Section 3(b) and 3(c) of the Smith-Lever Act. Supplementary Tables 1A, 1B, 1C, and 1D reflect the estimated allotments for Nutrition Education, payments to the 1890 Land-Grant Colleges and Tuskegee Institute, payments for rural development under Section 3(d) (Non-formula) of the Act, and payments for rural development extension education under the Rural Development Act Title V. Table II shows the basis on which the allotments will be made and the extent to which they must be matched by State and local sources. Table III indicates the sources of funds allotted for Cooperative Extension Work in the States, Puerto Rico, Guam, and the Virgin Islands for fiscal year 1974, including allotments under the Agricultural Marketing Act. Table IV indicates the various classes of field agents employed with Extension funds.

Table I

APPROPRIATION FOR PAYMENTS TO STATES
STATE ALLOTMENTS, FY 1974 - FY 1975

Smith-Lever Act: Sections 3(b) and 3(c)2		FY 1974	Increase or Decrease FY 1975:	Total Proposed for FY 1975
Alabama		\$ 3,285,828	\$ 157,781	\$ 3,443,609
Alaska		326,044	36,179	362,223
Arizona		653,538	54,694	708,232
Arkansas		2,672,652	137,632	2,810,284
California		2,865,939	186,766	3,052,705
Colorado		1,057,797	81,935	1,139,732
Connecticut		743,511	69,084	812,595
Delaware		409,509	39,536	449,045
Florida		1,512,994	122,215	1,635,209
Georgia		3,512,135	182,472	3,694,607
Guam		308,903	31,098	340,001
Hawaii		520,465	36,490	556,955
Idaho		898,124	76,770	974,894
Illinois		3,508,528	273,160	3,781,688
Indiana		3,051,725	251,453	3,303,178
Iowa		3,235,356	265,710	3,501,066
Kansas		2,016,290	148,817	2,165,107
Kentucky		3,626,376	238,647	3,865,023
Louisiana		2,280,025	131,742	2,411,767
Maine		810,437	61,223	871,660
Maryland		1,208,281	97,439	1,305,720
Massachusetts		979,960	80,590	1,060,550
Michigan		3,233,353	244,985	3,478,338
Minnesota		3,064,976	249,753	3,314,729
Mississippi		3,468,142	164,287	3,632,429
Missouri		3,276,256	223,841	3,500,097
Montana		851,816	72,657	924,473
Nebraska		1,760,660	138,700	1,899,360
Nevada		336,538	35,162	371,700
New Hampshire		513,733	47,728	561,461
New Jersey		951,219	80,757	1,031,976
New Mexico		739,606	56,616	796,222
New York		3,111,290	232,020	3,343,310
North Carolina		5,056,744	303,216	5,359,960
North Dakota		1,231,737	97,572	1,329,309
Ohio		3,927,716	292,896	4,220,612
Oklahoma		2,272,482	130,597	2,403,079
Oregon		1,212,457	98,826	1,311,283
Pennsylvania		3,924,265	282,498	4,206,763
Puerto Rico		3,409,901	194,887	3,604,788
Rhode Island		342,822	34,881	377,703
South Carolina		2,615,049	137,517	2,752,566
South Dakota		1,244,726	102,431	1,347,157
Tennessee		3,663,826	221,048	3,884,874
Texas		5,252,227	279,477	5,531,704
Utah		586,921	47,541	634,462
Vermont		598,971	52,552	651,523
Virginia		3,038,033	183,967	3,222,000
Virgin Islands		298,070	30,210	328,280
Washington		1,472,078	115,044	1,587,122
West Virginia		1,803,455	103,574	1,907,029
Wisconsin		3,067,754	248,556	3,316,310
Wyoming		498,411	45,171	543,582
Subtotal		\$106,309,651	\$7,310,400	\$113,620,051
Special Need Funds, Section 3(b) Smith-Lever Act		1,544,909	- -	1,544,909
Retirement and Employees' Compensation Costs		13,552,000	850,000	14,402,000
Penalty Mail Costs (for Extension Agents and Directors)		14,359,000	-4,463,000	9,896,000
Federal Administration and Coordination, Section 3(c)1 Smith-Lever Act		1,951,440	304,600	2,256,040
Funds for Allocation, Section 3(d) Smith-Lever Act:				
Expanded Nutrition Program 1/		50,252,000	-2,892,000	47,360,000
1890 Land-Grant Colleges and Tuskegee Institute 2/		6,000,000	260,000	6,260,000
Rural Development 3/		1,000,000	- -	1,000,000
Pest Management		500,000	1,180,000	1,680,000
Farm Safety		- -	1,020,000	1,020,000
Agricultural Marketing Act Funds		1,450,000	- -	1,450,000
Extension Work under D. C. Public Education Act, including Federal Administration		800,000	35,000	835,000
Title V, Rural Development Act Funds 4/		1,500,000	- -	1,500,000
Total Smith-Lever, AMA, D. C., and Title V Rural Development Act		\$199,219,000	\$3,605,000	\$202,824,000

1/ See Table 1A.

2/ See Table 1B.

3/ See Table 1C.

4/ See Table 1D.

Table 1A

APPROPRIATIONS FOR PAYMENTS TO STATES
NUTRITION EDUCATION, FY 1974 - 1975

Smith-Lever Act: Section 3(d)	Fiscal Year 1974	Increase or Decrease Fiscal Year 1975	Total Proposed for FY 1975
Alabama	\$ 1,590,212	\$	\$ 1,590,212
Alaska	135,271		135,271
Arizona	432,559		432,559
Arkansas	1,012,843		1,012,843
California	2,459,180		2,459,180
Colorado	428,188		428,188
Connecticut	347,096		347,096
Delaware	173,740		173,740
Florida	1,577,200		1,577,200
Georgia	1,731,950		1,731,950
Hawaii	203,901		203,901
Idaho	229,259		229,259
Illinois	1,659,266		1,659,266
Indiana	961,478		961,478
Iowa	732,064		732,064
Kansas	550,127		550,127
Kentucky	1,333,279		1,333,279
Louisiana	1,473,772		1,473,772
Maine	337,008		337,008
Maryland	659,546		659,546
Massachusetts	752,455		752,455
Michigan	1,412,536		1,412,536
Minnesota	794,596		794,596
Mississippi	1,370,776		1,370,776
Missouri	1,238,858		1,238,858
Montana	233,630		233,630
Nebraska	430,996		430,996
Nevada	130,576		130,576
New Hampshire	186,527		186,527
New Jersey	818,601		818,601
New Mexico	394,629		394,629
New York	2,596,663		2,596,663
North Carolina	2,052,659		2,052,659
North Dakota	277,334		277,334
Ohio	1,731,892		1,731,892
Oklahoma	831,446		831,446
Oregon	376,824		376,824
Pennsylvania	2,140,060		2,140,060
Puerto Rico	868,584		868,584
Rhode Island	237,676		237,676
South Carolina	1,237,295		1,237,295
South Dakota	311,217		311,217
Tennessee	1,591,075		1,591,075
Texas	3,319,773		3,319,773
Utah	237,028		237,028
Vermont	187,068		187,068
Virginia	1,360,473		1,360,473
Washington	521,637		521,637
West Virginia	786,504		786,504
Wisconsin	754,399		754,399
Wyoming	148,274		148,274
Reserve	2,892,000 1/	\$-2,892,000	-0-
TOTAL	\$50,252,000	\$-2,892,000	\$47,360,000

1/ Excludes \$308,000 proposed transfer to Federal Administration and Coordination for pay costs.

Table 1B

APPROPRIATIONS FOR PAYMENTS TO THE 1890 LAND-GRANT COLLEGES
AND TUSKEGEE INSTITUTE, FY 1974 - 1975

Smith-Lever Act: Section 3(d)	Fiscal Year 1974	Increase FY 1975	Total Proposed for FY 1975
ALABAMA:			
Alabama A&M University	\$ 334,203	\$ 13,538	\$ 347,741
Tuskegee Institute	334,203	13,538	347,741
ARKANSAS:			
Univ. of Arkansas at Pine Bluff	286,153	11,806	297,959
DELAWARE:			
Delaware State College	134,112	3,390	137,502
FLORIDA:			
Florida A&M University	252,233	10,486	262,719
GEORGIA:			
Fort Valley State College	367,332	15,655	382,987
KENTUCKY:			
Kentucky State College	409,147	20,475	429,622
LOUISIANA:			
Southern Univ. and A&M College	277,722	11,302	289,024
MARYLAND:			
Univ. of Maryland Eastern Shore	220,074	8,362	228,436
MISSISSIPPI:			
Alcorn A&M College	354,596	14,092	368,688
MISSOURI:			
Lincoln University	393,405	19,209	412,614
NORTH CAROLINA:			
North Carolina A&T State Univ.	556,914	26,016	582,930
OKLAHOMA:			
Langston University	261,172	11,205	272,377
SOUTH CAROLINA:			
South Carolina State College	309,909	11,798	321,707
TENNESSEE:			
Tennessee A&I State University	411,959	18,967	430,926
TEXAS:			
Prairie View A&M College	496,112	23,976	520,088
VIRGINIA:			
Virginia State College	360,754	15,785	376,539
Special Projects	240,000	10,400	250,400
TOTAL	\$6,000,000	\$260,000	\$6,260,000

Table 1C

APPROPRIATIONS FOR PAYMENTS TO STATES
RURAL DEVELOPMENT, FY 1974 - 1975

Smith-Lever Act: Section 3(d)	Fiscal Year 1974	Total Proposed for FY 1975
Alabama	\$ 24,636	\$ 24,636
Alaska	4,904	4,904
Arizona	7,626	7,626
Arkansas	19,435	19,435
California	25,470	25,470
Colorado	10,516	10,516
Connecticut	9,219	9,219
Delaware	5,369	5,369
Florida	15,832	15,832
Georgia	27,472	27,472
Hawaii	4,966	4,966
Idaho	9,632	9,632
Illinois	32,109	32,109
Indiana	29,584	29,584
Iowa	30,073	30,073
Kansas	17,733	17,733
Kentucky	29,264	29,264
Louisiana	18,679	18,679
Maine	8,470	8,470
Maryland	13,141	13,141
Massachusetts	10,856	10,856
Michigan	31,869	31,869
Minnesota	28,543	28,543
Mississippi	27,006	27,006
Missouri	28,127	28,127
Montana	8,875	8,875
Nebraska	16,083	16,083
Nevada	4,689	4,689
New Hampshire	6,511	6,511
New Jersey	10,698	10,698
New Mexico	7,482	7,482
New York	30,909	30,909
North Carolina	45,108	45,108
North Dakota	11,686	11,686
Ohio	36,119	36,119
Oklahoma	16,472	16,472
Oregon	12,305	12,305
Pennsylvania	36,857	36,857
Puerto Rico	32,799	32,799
Rhode Island	4,726	4,726
South Carolina	22,724	22,724
South Dakota	11,892	11,892
Tennessee	30,899	30,899
Texas	38,396	38,396
Utah	6,387	6,387
Vermont	7,187	7,187
Virginia	26,447	26,447
Washington	14,681	14,681
West Virginia	14,461	14,461
Wisconsin	29,233	29,233
Wyoming	5,843	5,843
Special Projects	40,000	40,000
TOTAL	\$1,000,000	\$1,000,000

Table 1D
APPROPRIATIONS FOR PAYMENTS TO STATES
TITLE V of RURAL DEVELOPMENT ACT of 1972
FY 1974 - 1975

	Fiscal Year 1974	Total Proposed for FY 1975
Alabama	27,948	27,948
Alaska	7,340	7,340
Arizona	10,478	10,478
Arkansas	24,529	24,529
California	32,862	32,862
Colorado	15,092	15,092
Connecticut	12,920	12,920
Delaware	7,908	7,908
Florida	21,925	21,925
Georgia	32,135	32,135
Hawaii	7,392	7,392
Idaho	14,215	14,215
Illinois	47,489	47,489
Indiana	43,813	43,813
Iowa	46,216	46,216
Kansas	26,419	26,419
Kentucky	41,640	41,640
Louisiana	23,537	23,537
Maine	11,585	11,585
Maryland	17,723	17,723
Massachusetts	14,871	14,871
Michigan	42,727	42,727
Minnesota	43,516	43,516
Mississippi	29,046	29,046
Missouri	39,131	39,131
Montana	13,518	13,518
Nebraska	24,703	24,703
Nevada	7,166	7,166
New Hampshire	9,298	9,298
New Jersey	14,898	14,898
New Mexico	10,802	10,802
New York	40,537	40,537
North Carolina	52,593	52,593
North Dakota	17,737	17,737
Ohio	50,843	50,843
Oklahoma	23,336	23,336
Oregon	17,955	17,955
Pennsylvania	49,096	49,096
Puerto Rico	34,225	34,225
Rhode Island	7,119	7,119
South Carolina	24,517	24,517
South Dakota	18,560	18,560
Tennessee	38,662	38,662
Texas	48,565	48,565
Utah	9,264	9,264
Vermont	10,114	10,114
Virginia	32,386	32,386
Washington	20,705	20,705
West Virginia	18,765	18,765
Wisconsin	43,317	43,317
Wyoming	8,862	8,862
4%--Federal Administration	60,000	60,000
10% to finance work in two or more States	150,000	150,000
TOTAL	\$1,500,000	\$1,500,000

Table II

APPROPRIATION FOR PAYMENTS TO STATES

Basis of Allotment and Matching Required, FY 1975

Item	Total Estimate 1975	Allotment	Amount Paid: Without Matching	Amount Required Matching
Smith-Lever Act:	\$199,039,000:			
Section 3(b)		\$ 56,475,091 - Fixed by Sec.3(b) of Public Law 87-749:	\$14,513,808:	\$ 41,961,283
		1,544,909 - Special Needs	- -	1,544,909
Section 3(c)		59,401,000	2,256,040:	57,144,960
		22,777,984 by farm population;		
		22,777,984 by rural population;		
		11,588,992 - equally; and		
		2,256,040 for Extension Serv-		
		ice administration		
		and coordination		
		Sec. 3(c) 1.		
Section 3(d)		57,320,000 - Allocated on	57,320,000:	- -
		basis of approved		
		projects.		
Retirement and Employee:		14,402,000 - Federal contribu-	14,402,000:	- -
Compensation Costs		tion to these funds		
Penalty Mail		9,896,000 - Reimbursement to	9,896,000:	- -
		the Postal Service		
Agricultural	1,450,000:	1,450,000 - approved projects:	- -	1,450,000
Marketing Act		and contracts		
Title V of Rural	1,500,000:	1,500,000	1,500,000:	- -
Development Act		300,000 - equally;		
		495,000 by rural population:		
		495,000 by farm population;		
		150,000 for approved pro-		
		jects; and		
		60,000 for Extension Serv-		
		ice administration		
		and coordination		
SUBTOTAL	201,989,000:	201,989,000	99,887,848:	102,101,152
D. C. Public	835,000:	835,000	33,400:	801,600
Education Act		801,600 to District of		
		Columbia and		
		33,400 for Extension		
		Service		
GRAND TOTAL	\$202,824,000:	\$202,824,000	\$99,921,248:	\$102,902,752

TABLE III

SOURCES OF FUNDS ALLOTTED FOR COOPERATIVE EXTENSION WORK

For Fiscal Year Ending June 30, 1974

STATES	GRAND TOTAL	Federal Funds	Total	FUNDS FROM FEDERAL SOURCES					STATE	COUNTY	NON-TAX
				Smith- Lever	Agricultural Marketing Act 1/ Act of 1972	Title V, Rural:					
						Development	Act of 1972				
Alabama	\$ 11,034,917	\$ 5,636,921	\$ 5,397,996	\$ 5,571,593	\$ 37,380	\$ 27,948	\$ 3,908,385	\$ 1,374,483	\$ 115,128		
Alaska	1,117,559	515,559	602,000	508,219	-	7,340	602,000	-	-		
Arizona	3,079,247	1,231,101	1,848,146	1,214,123	6,500	10,478	1,710,374	93,400	44,372		
Arkansas	8,930,570	4,036,692	4,893,878	3,991,083	21,080	24,529	4,033,465	656,315	204,098		
California	19,427,912	5,425,244	14,002,668	5,350,589	41,793	32,862	10,338,943	3,201,491	462,234		
Colorado	5,281,780	1,620,593	3,661,187	1,566,501	39,000	15,092	2,320,172	1,234,306	106,709		
Connecticut	2,498,681	1,120,416	1,378,265	1,099,826	7,670	12,920	1,378,265	-	-		
Delaware	1,220,179	752,838	467,341	722,730	22,200	7,908	414,841	10,600	41,900		
Florida	9,722,875	3,399,484	6,323,391	3,358,259	19,300	21,925	4,247,908	1,908,983	166,500		
Georgia	16,027,009	5,717,824	10,309,185	5,638,889	46,800	32,135	7,490,041	1,818,981	1,000,163		
Guam	434,701	308,903	125,798	308,903	-	-	125,798	-	-		
Hawaii	2,128,958	753,428	1,375,530	729,332	16,704	7,392	1,375,530	-	-		
Idaho	3,104,607	1,265,047	1,839,560	1,241,488	9,344	14,215	1,200,000	634,000	5,560		
Illinois	13,152,200	5,274,192	7,878,008	5,199,903	26,800	47,489	5,871,952	1,210,822	795,234		
Indiana	9,569,148	4,159,300	5,409,848	4,073,087	42,400	43,813	2,656,770	2,731,903	21,175		
Iowa	10,561,723	4,101,209	6,460,514	4,023,993	31,000	46,216	3,690,064	2,684,800	85,650		
Kansas	10,555,941	2,697,269	7,858,672	2,623,650	47,200	26,419	2,665,905	3,792,817	1,399,950		
Kentucky	10,907,479	5,491,706	5,415,773	5,398,066	52,000	41,640	3,770,924	1,644,849	-		
Louisiana	9,725,956	4,140,035	5,585,921	4,086,398	30,100	23,537	5,190,793	383,948	11,180		
Maine	2,685,021	1,184,900	1,500,121	1,155,915	17,400	11,585	1,159,021	326,700	14,400		
Maryland	5,855,742	2,161,765	3,693,977	2,101,042	43,000	17,723	3,087,477	600,000	6,500		
Massachusetts	4,451,992	1,811,542	2,640,450	1,743,271	53,400	14,871	936,496	1,703,954	-		
Michigan	13,364,092	4,848,985	8,515,107	4,677,758	128,500	42,727	5,697,000	2,319,985	498,122		
Minnesota	9,724,462	3,979,631	5,744,831	3,908,115	28,000	43,516	3,750,816	1,960,140	33,875		
Mississippi	10,561,172	5,281,156	5,280,016	5,220,520	31,590	29,046	4,156,161	1,084,164	39,691		
Missouri	12,423,202	5,037,877	7,385,325	4,936,646	62,100	39,131	5,245,579	1,445,950	693,796		
Montana	3,045,414	1,215,339	1,830,075	1,192,621	9,200	13,518	695,643	916,500	217,932		
Nebraska	6,797,349	2,283,892	4,513,457	2,252,039	7,150	24,703	2,886,449	1,604,342	22,666		
Nevada	1,779,069	565,069	1,214,000	557,903	-	7,166	863,155	340,895	9,950		
New Hampshire	1,592,315	726,069	866,246	706,771	10,000	9,298	517,747	348,499	-		

STATES	GRAND TOTAL	Total Funds	Total Within States	Total Act	FUNDS FROM FEDERAL SOURCES					STATE	COUNTY	NON-TAX
					Smith- Lever	Act	Marketing: Act 1/	Title V, Rural: Development : Act of 1972 :				
New Jersey	\$ 5,908,879	\$ 1,811,416	\$ 4,097,463	\$ 1,780,518	\$ 16,000	\$ 14,898	\$ 2,502,232	\$ 1,595,231	\$ -			
New Mexico	3,056,219	1,272,019	1,784,200	1,239,217	22,000	10,802	1,266,500	480,000	37,700			
New York	19,102,616	5,833,399	13,269,217	5,738,862	54,000	40,537	4,606,581	8,051,348	611,288			
North Carolina	19,639,325	7,860,206	11,779,119	7,746,073	61,540	52,593	7,406,963	4,310,000	62,156			
North Dakota	3,540,161	1,625,494	1,914,667	1,594,757	13,000	17,737	954,514	810,508	149,645			
Ohio	12,423,258	5,785,170	6,638,088	5,695,727	38,600	50,843	3,665,000	2,606,406	366,682			
Oklahoma	8,447,486	3,503,308	4,944,178	3,415,572	64,400	23,336	3,024,268	1,469,910	450,000			
Oregon	6,812,969	1,704,741	5,108,228	1,639,586	47,200	17,955	3,932,228	1,176,000	-			
Pennsylvania	10,420,882	6,177,378	4,243,504	6,101,182	27,100	49,096	3,033,504	1,210,000	-			
Puerto Rico	7,112,130	4,345,509	2,766,621	4,311,284	-	34,225	2,693,228	-	73,393			
Rhode Island	1,073,856	596,113	477,743	585,224	3,770	7,119	424,742	45,474	7,527			
South Carolina	7,961,944	4,231,602	3,730,342	4,201,977	5,108	24,517	3,719,742	-	10,600			
South Dakota	3,844,569	1,630,568	2,214,001	1,603,835	8,173	18,560	1,685,233	520,234	8,534			
Tennessee	10,591,037	5,778,311	4,812,726	5,714,759	24,890	38,662	3,583,000	1,229,726	-			
Texas	23,019,659	9,291,286	13,728,373	9,202,608	40,113	48,565	9,368,285	4,141,156	218,932			
Utah	2,387,642	951,522	1,436,120	925,336	16,922	9,264	1,104,000	301,120	31,000			
Vermont	2,004,598	827,673	1,176,925	805,226	12,333	10,114	998,425	172,000	6,500			
Virginia	14,377,203	4,873,793	9,503,410	4,815,707	25,700	32,386	7,687,450	1,815,960	-			
Virgin Islands	424,070	298,070	126,000	298,070	-	-	126,000	-	-			
Washington	5,970,906	2,054,001	3,916,905	2,008,396	24,900	20,705	2,462,799	1,429,106	25,000			
West Virginia	4,612,539	2,630,085	1,982,454	2,604,420	6,900	18,765	1,075,514	906,940	-			
Wisconsin	11,004,761	3,940,778	7,063,983	3,870,161	27,300	43,317	3,784,453	3,129,509	150,021			
Wyoming	1,821,975	706,190	1,115,785	692,528	4,800	8,862	804,784	311,001	-			
Unallotted	1,114,302	1,114,302	-	964,302 3/	-	150,000 4/	-	-	-			
AMA Contracts	17,640	17,640	-	-	17,640	-	-	-	-			
GRAND TOTAL	\$407,451,898	\$165,604,560	\$241,847,338	\$162,714,560	\$1,450,000	\$1,440,000	\$161,897,119	\$71,744,456	\$8,205,763			
District of Columbia 2/	1,536,000	768,000	768,000	-	-	-	768,000	-	-			

1/ Preliminary Distribution
2/ D. C. Public Education Act
3/ Includes \$500,000 for Pest Management Funds not distributed at this time.
4/ Not distributed at this time.

TABLE IV

COOPERATIVE EXTENSION AGENTS, BY ORGANIZATION CLASSES
(Man-year Equivalents)

Extension Workers by Organization Classes	FY 1972	FY 1973	FY 1974
<u>State Workers:</u>			
Directors and administrative personnel	344	358	438
Specialists	3,612	3,735	4,037
Total, State Staff	3,956	4,093	4,475
<u>County Workers:</u>			
Leaders and Supervisors	599	599	686
Area Agents	1,167	1,195	1,363
County Extension agents	9,760	9,748	9,767
Total, County Staff	11,526	11,542	11,816
Grand Total	15,482	15,635	16,291

STATUS OF PROGRAM

The Extension program is continuing to be adjusted to meet the current needs of its clientele.

- A. Agricultural programs are designed to:
 - Strengthen the independent family farm.
 - Increase net income for farmers at the marketplace.
 - Improve agricultural production and marketing systems.
 - Use tools to improve decision making.
 - Adjust to new environment standards.
 - Expand pest management programs.
 - Improve economic understanding.
- B. The community development program is devoted primarily to helping people give group consideration to community problems.
- C. Extension 4-H programs are continually developed to serve more effectively the needs of today's youth. Programs are being expanded as a prime target to reach more youth wherever they live and whatever their socio-economic background. Currently 27 percent of the youth reached through 4-H youth programs are from minority ethnic and racial groups.
- D. Extension home economists continue to assist people to identify their needs and to improve the quality of their homes, their community and their future. Special effort is directed to low-income families, racial minorities, the handicapped, the elderly, and young families.

SPECIFIC EXAMPLES OF ACCOMPLISHMENTS FOLLOW:

IMPROVING FARM INCOME

Wheat. The Cooperative Extension Service developed an expanded educational campaign to help producers understand the changing agricultural situation. ES-USDA and the National Association of Wheat Growers (NAWG) sponsored four regional meetings in winter wheat-producing areas for State Extension Services and industry leadership as a basis for making available additional materials for local meetings.

Swine. Since 1968, the Extension Service has helped the swine industry conduct nine research reviews and develop 46 fact sheets in major problem areas identified by swine producers. These materials have been extensively used in county, state, regional, and national educational programs by Extension and the swine industry. In 1972, the major problem area identified by swine producers was the Pork Stress Syndrome. Producers were concerned because of increased death losses in their herds any time they were stressed by hauling, weening, castration, or any other management practice. All of the research was reviewed in this subject matter area and fact sheets and visuals were prepared for educating producers on how to prevent the Pork Stress Syndrome. As a result, death losses from the Stress Syndrome are substantially decreasing.

In 1973, based on business analysis, the swine producers defined the pork production and marketing systems as their major area of need. The Extension Service is cooperating with Purdue University and the swine industry on a project to develop the systems.

Cotton. Extension specialists at the national and state level have worked with industry leadership and county agents to bring to the attention of cotton producers the need to fully utilize technology that would help them keep cotton profitable and at the same time competitive with synthetic fibers. During the

last year, special demonstrations have been conducted on land preparation, weed control, narrow row-short season cotton, insect management, field storage of seed cotton, and marketing. Extension worked jointly with the National Cotton Council in holding six regional cotton meetings to discuss production technology aimed at getting maximum profitable production from cotton acreage and to discuss the potential shortage of production supplies such as fuel, fertilizer, and pesticides.

Sheep. A publication entitled "Earning a Living with Sheep" was published in February 1973. Approximately 5,000 copies of this publication have been distributed throughout the Nation.

Four regional Sheep for Profit task forces were organized. The task forces were composed of state specialists from a variety of disciplines. Initial meetings were held with each task force to introduce them to the Sheep Industry Development Program, Inc., and plan for future work of the task force. Two of these task forces, the Western and Southwestern, were instrumental in planning a Symposium on Profitable Range Sheep Production held in Denver, Colorado, October 1973. Several hundred sheep producers, industry personnel, Extension specialists, and researchers attended the symposium. Work was also completed this year on the last two management systems for 1,000- and 6,000-ewe range flocks. Several thousand copies of the system outlines have been used by the Sheep Industry Development Program and Extension personnel.

Apples. Special programs have been initiated in three problem areas by nationally coordinated Extension groups in cooperation with industry leadership: (1) quality improvement and maintenance; (2) labor management training; and (3) orchard block management analysis. Several quality improvement and maintenance workshops were conducted for producers in major apple-producing states. An educational discussion series, "Apple Marketing Facts for the Future," was finished and distributed to industry leaders and Extension personnel.

Soybeans. The increasing domestic and world demand has sharply reduced supplies of soybeans, and the outlook indicates a continued rising demand. The Cooperative Extension Service is directing efforts toward problems related to supplying the rapidly rising world demand for soybeans.

Several publications have been developed to assist soybean producers in increasing the production of soybeans. These include leaflets such as "No Tillage Soybean Production" and "Double Cropping with Soybeans--Will it Pay on Your Farm?" A slide series is currently being prepared on proper harvesting techniques to increase per acre yield. Soybean marketing provides several alternatives to soybean producers. An Extension Service pilot project with North Carolina University Extension Service is underway to develop additional materials for producers on various marketing alternatives such as futures contracts, forward (cash) contracts, storage, and other marketing strategies.

Potatoes. In cooperation with industry leaders, the Cooperative Extension Service, along with the staff of research agencies, is exploring the development of educational materials and future workshops for producers concerning production and how to meet marketing needs; transportation; marketing, providing producers with pertinent and comprehensive marketing information; contracts and processor relations; guidelines for equitable contracts between producers and processors; farm management, recordkeeping, and record analysis.

In 1970, the Extension Service initiated variety trials for potatoes. Western regional variety trials in 1973 included 18 new varieties and 5 standard varieties of potatoes. The variety trials are being conducted in 11 Western States in cooperation with 450 producers and 11 processors.

Environmental Improvement. A 6-state Great Plains project on animal feedlot waste has resulted in the installation of waste management systems from designated criteria which meet EPA effluent guidelines, limitations, and standards.

It is reported that 95 percent of the cattle on feed in the six cooperating states, except Nebraska, are in feedlots which have water pollution control systems designed to meet EPA standards. In Nebraska the number of feedlots with pollution control facilities has increased from 75 to 160 during the past year. Educational materials entitled, "Agricultural Animals and the Environment," developed under the direction of the project have been used by 29 colleges and universities and also for summer institutes and short courses. Approximately 23,500 each of four fact sheets were developed and distributed in 10 Great Plains States to feedlot operators and educators. Extension Service represented USDA in providing assistance to EPA in developing standards and regulations for concentrated animal production systems for the National Pollution Discharge Elimination System.

In conjunction with the National Science Foundation (NSF), Extension Service initiated pilot projects to determine the capability for direct technology transfer by State Cooperative Extension Services to state and local governments. The effort of these projects is to test systems and methodologies that will be affected in the direct transfer of environmental information that will enhance the decision-making capabilities of State and local governments. Currently, three projects are being funded by NSF and the Cooperative Extension Services of Colorado, Oklahoma, and Tennessee. The Extension Service represented USDA on an EPA task force to assist in a reassessment of the National Pollution Discharge Elimination System (NPDES) proposed guidelines. The guidelines and regulations established criteria for feedlots that must register and apply for a permit to discharge effluent into U. S. waters.

In cooperation with the Environmental Protection Agency, other agencies in USDA, and State Extension Services, ES is conducting studies to expedite and assist the practical implementation of the Federal Water Pollution Control Act Amendments of 1972 (PL 92-500). Special emphasis has been placed on a "national pollutants discharge elimination system" and related regulations and permits required by PL 92-500 for agriculture and associated industries.

Foreign Trade. Extension Service has incorporated foreign trade into its present educational programs and developed additional materials. Current foreign trade activities are being directed primarily through the Extension Service Commodity educational programs. Several inputs, a reference publication, and slide series were prepared on soybean foreign market development activities. These have been used extensively throughout the soybean-producing states. A series of fact sheets on foreign trade are planned for wheat producers.

Under an ES-USDA pilot project with Michigan State University, comprehensive educational materials, including a pamphlet, teaching manuals, and teaching aids such as slides and charts were prepared for use by state specialists. These materials were prepared for use in presenting programs to audiences of agricultural producers and processors who would be interested in exporting their products, or have no knowledge of the procedures or rationale of farm marketing.

Pest Management. Objectives of the pest and disease management program are to establish multiple and alternative choice systems of pest control that are effective, economical, and environmentally sound. The ultimate goal of these projects is to promote effective use of combinations of cultural, biological, and chemical methods. Currently there are 39 projects being conducted in 29 states dealing with 15 major crops. Depending on the type of local agriculture, crops involved, and pest complexes. The crops vary from 10-acre blocks in orchards involving 20 apple growers in Pennsylvania to 224,900 acres of cotton on 901 farms in Arkansas. The development of pilot pest management projects is progressing from simple to complex systems. The first projects on tobacco and cotton involved only regulating insect densities, whereas in recently established projects, attempts are being made to manage complex communities of insects and weeds, insects and diseases, and in one project, diseases, insects,

seeds, and nematodes on specific crops. The ultimate goal of these projects is promote effective use of combinations of cultural, biological, and chemical methods.

Farm Safety Program. Twelve State Extension Services have cooperated with farm organizations and the National Safety Council in conducting farm accident surveys to determine the problem areas requiring safety education and safety standard enforcement in agricultural labor. These studies have culminated in state publications as well as in reports from the National Safety Council. Attention has been given to the organization for action with the Extension Service, the basic program content of accident injury studies, voluntary agricultural safety emphasis, and agricultural safety requirements.

Ohio reports that during the five-year period (1967-1972) accidents to farm people in Ohio dropped 25 percent while the farm population decreased only 11 percent. They further stated that 6 percent of the farm people had accidents in 1967 as compared to 5 percent in 1972.

Project Safeguard. Project Safeguard is a specially designed pesticide safety educational program which was planned, financed, and is being carried out by Extension Service, Environmental Protection Agency, and Cooperative Extension Service in a 15-state area. It is a concerted program directed toward small acreage cotton, peanut, and soybean farmers who were expected to use the more highly toxic insecticides as substitutes for DDT in their pest control programs. The major objective of the program was that of alerting small farmers, via use of safety aides, to the hazards involved in the use, handling, transportation, storage, and disposal of pesticides so that any adverse effects on man and the environment would be prevented or minimized. In most states, small farmers were contacted by safety aides individually on a face-to-face basis. As of August 1973, over 126,000 farmers (90 percent of the target audience) had been contacted in a 15-state area where Project Safeguard is being conducted.

Food Safety. A joint industry-USDA task force was organized during the year and supported the food safety program designated as Project Consumer Concern which resulted in: (1) development of three demonstration stores in Pennsylvania, North Carolina, and Ohio for defining food safety problems and testing consumer education methods; (2) development of total food store sanitation procedures for use by supermarkets and check lists for use of supervisors in these firms; (3) presentation of food safety information developed from Project Consumer Concern to national, regional, and state grocery associations and to the Food Distribution Research Society; (4) distribution of the total food store sanitation procedures to the food industry by the National Association of Retail Grocers and to designated Extension specialists in 50 states responsible for food safety; (5) development of plans with Ohio State specialists for conducting a coordinated food safety program for food retailers with participation by area Extension agents, food science, food distribution, home economics specialists, local health inspectors and state agricultural inspectors, and state grocer associations. Cooperation with state ordinances for food service and retail stores were developed.

"Who Will Control U. S. Agriculture?" An educational effort initiated by the North Central Extension Public Policy Educational Committee entitled "Who Will Control U. S. Agriculture?" has resulted in a base publication on the subject and a series of discussion leaflets for use in educational programs in individual states. It has resulted in multi-state meetings of farm and agribusiness leaders to discuss the problems involved in U. S. agriculture and it points out ways in which these leaders and individual farmers can affect the changes which may occur in the structure of agriculture. Following these multi-state meetings of agricultural leaders, individual states are initiating intensive educational efforts with farmers at which time they will discuss the alternatives in control of agriculture. These sessions are being carried out in nearly all of the states. To date, 46,000 copies of the five-part discussion leaflets have been ordered by individual states. In addition, the discussion leaflets have

been reproduced in total by farm magazines. More than 1,500,000 copies have been printed and distributed in farm magazines.

These educational programs enable the independent family-owned farm operator to better understand the effect that economic pressures and Government action have on the structure of the agricultural firm within which he must operate and produce adequate quantities of food and fiber.

COMMUNITY RESOURCE DEVELOPMENT

Community Resource Development programs reach into practically every county in the nation. In one community development program thrust alone, organization and leadership development, Extension assisted 2,931 counties out of the national total of 3,150.

The following table gives some idea of the scope of Extension community development activities during fiscal year 1973.

Community Development Information and Technical Assistance Provided by Extension Service, Fiscal Year 1973

Man-years expended	1,324
Projects assisted	47,000
Surveys and feasibility studies	11,000
Workshops, conferences, meetings:	
Convened and conducted	45,010
Assisted	46,000
Different publications prepared	175,000
Number of copies distributed	5,300,000
Audio-visual presentations	50,000

Following are selected examples of Extension community development involvement in different program thrusts.

Organization and leadership development. Extension has helped hundreds of community groups to identify leaders, organize into a study body, determine priority problems and act on solutions to community problems. In Jackson County, Ohio, the County Development Committee has supported and helped pass a vocational school levy and has helped a community group in its efforts to secure funding for a rent-subsidized housing complex for senior citizens. The committee had earlier determined that jobs, sewage, housing, rental homes, and a vocational school were priority problems. Through a systematic process, almost half the parishes in Louisiana have identified community leaders and priority problems. This has been followed by town hall meetings and community action on priority problems.

Community facilities and services. Ranchers and others in Nevada's remote Upper Reese River Valley now have phone service. For some, it's the first they've had in four years. Service over the telephone cooperative line began in mid-April 1973. It culminated an effort launched by people in the valley almost a year earlier. The construction of some 53 miles of line was a do-it-yourself effort.

Business and industrial development. In cooperation with a State Forester in

New Hampshire, an Extension Specialist assisted a pallet firm in the decision where to locate. The establishment of a log scaling mill provided direct employment for five local residents and markets for 7.5 million board feet of low grade hardwood logs. This represents about \$375,000 in value delivered to the mill. Of this value, landowners received about one-half for stumpage and loggers and truckers the other half for services. In addition, the establishment of the mill added stability to the economic base of the area.

Comprehensive planning. In response to considerable demand in Pennsylvania, the Extension Service has developed two correspondence courses on comprehensive land use planning for individual and group instruction. Training programs have been conducted in almost all counties of the state, and in many townships and boroughs. These meetings are usually co-sponsored by the local government unit.

Housing. In Alabama, one of the regional housing authorities that Extension assisted recently received Federal funds to start construction in the rural areas of its 10-county region. Approximately 40 houses have been built. In Texas, more than 24,500 families in 142 counties participated in Extension educational housing programs. Families representing all economic and ethnic groups sought new information needed to help make decisions, learn skills, and to take appropriate action in acquiring and improving housing. In 19 counties, more than 1,100 individuals received information and/or assistance through cooperative programs with other agencies and organizations.

Environmental improvement. Madison County, Alabama, people decided to do something about trash, litter and garbage in rural areas of the county. A massive two-week Trash Harvest resulted in the collection of 1,500 truck loads of solid waste from roadsides, yards, and unauthorized dumps. With the goal of making the county "the cleanest in the nation," over 6,000 people were involved, reports the "Harvest" chairman, a woman who is also a member of the county rural development committee. The county Extension chairman, who was coordinator of the campaign; points out that "besides the countless individuals who participated in the clean-up program, 34 civic organizations, 29 schools, 30 boy and girl scout troops, 23 homemaker clubs and 13 garden clubs worked in specific areas." Another Trash Harvest is planned.

1890 LAND-GRANT COLLEGES

Extension has increased its competency in assisting previously unreached citizens through educational programs carried out through sixteen 1890 Land-Grant institutions and Tuskegee Institute.

Home Economics. Fifteen of these institutions are expanding their existing Home Economics programs in order to more effectively assist families improve the quality of their lives; ten 1890 institutions and Tuskegee are developing an array of programs in areas such as Farm Management, Crop Production, and the development and use of commodity markets, these educational efforts designed to assist low-income farmers improve their farm income.

4-H Youth. More young people are being reached through 4-H Youth programs being carried out by fourteen of these institutions.

Community Resource Development. 1890 institutions and Tuskegee are assisting rural communities to develop through the Community Resource Development programs.

DIETS AND NUTRITION

National leadership in family-related education is provided on program organization, management, and development; methodology; and subject matter content, with major focus on food and nutrition, consumer resource management, family relations and child development, housing, health, and community resource development.

More than 860,000 volunteer leaders assist Extension home economists in helping an audience of 16.5 million families to improve the quality of their family life and the nutrition of family members. The National Extension Homemakers Council, with homemaker groups in 43 States and a membership of about 610,000 women, gives valuable leadership in assisting staff members to extend educational programs to thousands of these families which could not otherwise be reached by Extension.

Food and Nutrition. A large portion of the time of Extension home economists at all levels--national, State, and county--is devoted to food and nutrition education. All segments of society are reaping benefits from Extension nutrition programs aimed at improving the diets of family members.

This important area has received increased emphasis since the initiation in FY 1969 of the Expanded Food and Nutrition Education Program. As of December 31, 1972, 334,300 families were actively enrolled and receiving instruction in this program, whose audience is the hard-to-reach low-income. As of that date, 8,700 program aides were employed in about 1,500 county and city sites in the 50 States, Puerto Rico, District of Columbia, and the Virgin Islands. In addition, during the previous 18-month period about 85,000 volunteers worked with more than 1.1 million youth in 4-H type activities related to improved nutrition.

Food recalls to determine balance of diets of program homemakers taken at 6-month intervals indicate that recommended minimum daily milk consumption increased from 15 percent to 28.2 percent in 2½ years. Consumption of fruits and vegetables increased from 11.1 percent to 22.9 percent during the same period.

FAMILY LIVING

Extension programs include family economics and management, as well as education related to selection, maintenance, and use of consumer goods and services. Families are assisted in decision making and in using available resources to reach their economic and social goals.

Consumer Resource Management. Innovative methods and materials in family resource management and consumer education for low-income and other audiences have been developed. Materials have been tested for use by individuals and couples, professionals and paraprofessionals, families, and volunteers. Behavioral changes were noted in 370 families tested in four States as a result of using these materials.

Family Relations and Child Development. Extension's teaching efforts are directed toward helping families practice principles of child rearing and human relations that result in good interpersonal relations, better personalities, and worthwhile citizens.

Young homemakers with children comprise an increasingly greater portion of Extension's audience. The Alaska Cooperative Extension Service served as the catalyst of a group of organizations who sponsored a TV series--"How Do Your Children Grow?" Originally designed for broadcast only, it was developed into a non-credit short course for home study, with questions mailed to enrollees a week ahead of each of the 23 programs and certificates awarded to viewers who responded to 15 or more programs.

The elderly and handicapped are increasingly numerous in our population and have special needs in many areas of home and family living. Extension homemaker club members in one Louisiana parish planned an educational program of activities of interest to senior citizens. More than 1,100 elderly individuals were reached by 604 members of 35 homemaker clubs.

Housing. Extension home economists assist in educating families in areas of housing, home furnishings, and equipment, to enable them to make decisions and

implement plans to improve their housing and living environment within their financial capability and to the satisfaction and comfort of family members.

Resource material developed in North Carolina and Oklahoma on storage for low-income housing is being made available to every State. Results of a recently completed 3-year pilot program in South Carolina will provide valuable information for other States in developing programs to help bring about action needed to get more and better quality housing in rural areas.

One month after Extension housing aides began working within a new housing area in Oklahoma, maintenance costs started going down. The aides described their job as "teaching people to help themselves, not doing for them." By preparing these Indian families to move from inadequate to new houses, solving housing problems, and teaching homemaking skills, the aides helped them improve their quality of living.

Health. Extension homemaker volunteers are involved in numerous health programs, such as community screening program, cancer detection clinics, rubella immunization, study of birth defects, mental health, venereal disease, and drug abuse education. In conducting a statewide education program on diabetes and diabetes detection, 3,080 Indiana Extension homemaker club members used over 50,000 publications supplied by the State health department to help individuals better understand diabetes.

Georgia Homemakers Council program emphasized care and treatment of emotionally disturbed and mentally retarded children. Homemakers helped secure a school for mentally retarded in one county.

Kansas Extension Service and community mental health center directors cooperated to promote prevention education programs in communities throughout the State. In workshops conducted by Extension, mental health professionals learned about prevention through family education programs.

4-H - YOUTH DEVELOPMENT

In recent years, gradual shifts in 4-H - Youth programs have been made in an effort to respond to broadening interests and personal developmental needs of youth. These shifts include--

- More emphasis on science in 4-H educational programs and projects related to agriculture, family living, and other areas.
- Response to important national concerns such as greater agricultural production, environmental improvement, programs on drug education and other health choices, and others.
- Inclusion of career exploration and youth employment as integral parts of 4-H project programs with special emphasis for teen-age youth.
- Concentrated 4-H nutrition education programs for low-income city youth.
- Broadened outreach to low-income and minority youth in both rural and urban areas.
- More flexibility in programs, organizational patterns and educational methods, including instructional 4-H television to serve youth in diverse socioeconomic and residential situations.
- Greater involvement of youth themselves in program development.

The most recent national summary shows that Extension is now serving over 5 million youth as follows:

Youth Served through 4-H - Youth Development Programs--1972

Members in Organized 4-H Clubs	2,173,799
Youth in 4-H Special Interest Groups	545,018

Instructional 4-H TV Members	411,230
Special 4-H Nutrition Programs for City Youth	866,220
Youth Attending Extension 4-H Conducted Camps	385,814
Other Youth Contacted or Provided Information (Estimated)	1,480,040

There were over 109,200 4-H units, including over 95,000 organized 4-H Clubs and more than 13,000 4-H special interest groups. Over 505,000 volunteer leaders--adults and junior and teen leaders--assisted with the 4-H program during the past year.

4-H Members in 4-H Clubs and 4-H Special Interest Groups
By Place of Residence--1972

	<u>Percent</u>
Farm	31.2
Towns under 10,000 and open country	43.2
Towns and cities 10,000 to 50,000	12.6
Suburbs of cities over 50,000	6.1
Central cities of over 50,000	6.9
	<u>100.0</u>

4-H Project Enrollments--1972

The total enrollment in 4-H projects and activities during the past year increased over the previous year. In 1972, there was a total 4-H project enrollment of 7,482,510, with an average of 2.75 projects per member. Most popular 4-H projects were:

Animal Science, Production	1,207,499
Clothing	786,312
Food and Nutrition *	771,644
Recreation, Arts, Crafts	555,181
Plant Science, Crops	528,078
Community Service, Citizenship	387,455
Conservation--Soil, Water, Wildlife, Forestry	382,389
Safety, Emergency Preparedness	369,233
Health, Physical Fitness	299,454
Personal Development	263,928
Bicycle Care and Safety	263,102
Tractor, Small Engines, Automotive	197,303
Home Improvement and Furnishings	174,423
Public Speaking	167,945
Woodworking and Other Shop	126,139
Family Life, Child Care	120,675

Electric	119,580
Home Management, Money Management	108,823
Photography	101,559
Career Exploration	67,842

* Does not include youth who participated in activities in connection with special 4-H Nutrition Education Program.

4-H Rural Community Development. 4-H rural community development was a major thrust of 4-H - Youth programs in all States and Puerto Rico during the past year. Almost all 4-H'ers participated in various programs designed to improve their own communities such as soil, water, and wildlife conservation; pollution control, community beautification and cleanup; they served on local or State community development committees, conducted studies and surveys, developed community centers, and organized other special projects.

In Virginia, for example, a "Youth in Action" program was initiated to help youth learn about their communities, develop skills in community leadership, and carry out significant action projects to improve the quality of their environment. As of August 1973, more than 700 youth were involved in these groups under the guidance of two or more volunteers per learning group. Examples of programs being undertaken by these groups include a solid waste disposal system study and solution, a survey and reasearch of recreational opportunities in the county which will then be compiled into a brochure for planning purposes, county facility surveys, and others. Also, youth in these groups participated on Citizen's Committees on Solid Waste Disposal, Recreation Committees, County Improvement Councils, and similar planning groups.

By means of a mini-grant in New York State, 4-H youth in Oswego County participated in an environmental study of Little Sandy Creek. After interviewing local residents along the 15-mile stretch of stream, surveying property ownership, and conducting biological and chemical studies, the youth collated their information and are in the process of presenting it to local decision-making groups such as town boards, fish and game clubs, civic groups, and the county legislature.

Career Program in Missouri Bootheel. A demonstration 4-H youth career exploration project has been launched in the six-county southeast Missouri area known as the "Bootheel." The project has been developed and implemented jointly by Lincoln University (1890 institution), the University of Missouri Extension Division, and Extension Councils in the six counties. In each of the nine co-operating school districts, youth in both junior and senior high school classes are involved. Special assistance, including work with parents, is being given to 600 youth from low-income families. This program, serving low-income and minority youth especially, is closely related to the overall Bootheel community development effort.

4-H Expanded Food and Nutrition Education Program. The fastest growing phase of 4-H is the Expanded Nutrition Education Program. Since its inception in July 1970, over 1,165,970 youth have been reached through this special program aimed at improving dietary levels of low-income families, particularly city youth, through education and improved use of available resources. The number of volunteers assisting in this program also continues to increase. For the first six months of FY 1973, 500,000 boys and girls were enrolled, under the leadership of 85,000 volunteers. Along with better eating habits, youth learned easy food preparation and food shopping skills. They participated in camps, tours, educational games, and other activities, all focused on learning about nutrition.

Project and Curriculum Development. During the last year, 13 national 4-H program development committees were in various stages of reviewing present projects and programs, updating them or initiating new programs with additional curriculum materials. Areas covered by these committees were: Aerospace; Consumer Education; Furnishing, Housing and Equipment; 4-H Incentives and Awards; Staff Development and Training; Urban; Home Management; Petroleum Power; Electric; Nutrition; Citizenship; and Community Development.

A 4-H Agricultural Science Project for youth in Van Wert County, Ohio, has resulted in a successful commercial roadside market program involving youth and their parents. Studies are continually made by 4-H ag science members and adults on the best varieties of fruits and vegetables to plant for the soil available and the best commercial practices to use. One roadside market has been established in potatoes and two commercial strawberry roadside sales are in operation. Each has returned the families \$2,000 per acre.

Health Concerns. Although every State continues with some type of educational or preventive drug program aimed at youth, the past year has indicated that alcohol abuse is becoming a prime concern of teenagers in programming for this group. Extensive use has been made of the Social Seminar Training Laboratory which offers excellent approaches to working with youth and their health decisions. Social Seminar Training was offered at three national gatherings and all States were alerted to its availability in local planning.

Sixteen States were assisted with new or further programming in the areas of mental health. Great interest is evidenced in personality and adjustment content.

Consumer Education and Youth. A new curriculum plan for consumer education in 4-H is currently being developed nationally by the Extension Service and a National 4-H Program Development Committee. This curriculum includes the following major areas of emphasis: (1) The individual as a consumer, (2) The consumer as a member of society, (3) Alternatives for the marketplace, and (4) The consumer's rights and responsibilities.

Consumer education is incorporated into many projects, and, in some States, is a special project. In Missouri, a consumerama program was designed to strengthen the consumer education aspect of the major 4-H projects of foods and nutrition, clothing and home improvement. Last year's 4-H consumer program focused on clothing. Approximately 1,200 4-H members and leaders in 14 areas of the State participated. Purpose of the program is to provide 4-H members with information that will help them become more intelligent consumers and give 4-H leaders guidance on including more consumer information in their project meetings.

Teen and Older Youth Programs. Expressed needs and concerns of older youth formed the basis for programming with this age group during the last year. In most States, teens themselves were actively involved with adults in initiating and implementing their own programs. A national workshop on Programming for Teens was attended by 32 State and county professional staff members. Followup information indicates that 26 of these youth workers have replicated or adapted this model in their own localities.

A special grant for a 4-H careers pilot program in New Mexico has produced a highly workable model for training and placing teens in jobs in the community. Over 15 States have requested and received procedural steps in setting up similar programs.

4-H in Urban Areas. Urban 4-H membership increased about 100,000 over the previous year. In 1972, 340,000 4-H members came from towns and cities 10,000 to 50,000; 165,000 from suburbs of cities of over 50,000 and 187,000 from central cities of over 50,000. This does not include youth reached through the 4-H

Expanded Food and Nutrition Education Program for low-income city youth nor the large numbers of city youth enrolled in 4-H instructional TV.

Over 1,000 educational projects and activities have been developed by urban extension professionals and utilized through volunteers and paraprofessionals. Programs of special interest have included health and physical fitness, career exploration, environmental ecology, nutrition, crafts, personal skills, heritage and culture, community improvement, embryology, and bicycle safety.

A 4-H Resource Center was started in an area of Detroit, Michigan, that has predominantly minority groups and the second highest crime rate in the city. Over 500 boys and girls regularly come to the center to participate in various activities such as arts, crafts, personal appearance, recreation, field trips, and other projects and activities.

In Terre Haute, Indiana, more than 400 inner-city youngsters enjoyed five week-long sessions at a day camp where they learned crafts, outdoor cooking, and nutrition lessons. In Indianapolis alone, 16,000 youth now participate regularly in 4-H clubs, nearly half of them are inner-city children.

Programs for Disadvantaged and Minority Youth. Programs designed to increase participation of low-income and minority youth in 4-H continues a major emphasis in all States. Approximately 28 percent of the youth reached in 4-H are from families with annual incomes of \$3,000 or less. Twenty-seven percent are from minority racial or ethnic groups. More than 15 States held opportunity camps last year, especially for disadvantaged youth. Vermont built the 4-H method into three urban centers for 4,000 low-income youth. Georgia trained 4-H teen leaders to work with 6,000 low-income youth on nutrition, health, and personal development.

As a part of special efforts in Texas, 4,835 additional Mexican-American youth have been enrolled in 4-H and 460 volunteer leaders from this minority group. Projects in which the youth participated included vegetable gardening, fire prevention and safety, motorcycle safety and maintenance, and 4-H nutrition.

Several States reported special programs to reach youth of migrant workers. In California, a special camping program for 180 migrant children was held in one county. In addition to the opportunity for camp-type experiences, young people participated in nutrition, arts and crafts, music and recreation projects. Fifty children of migrant farm workers in Columbia County, Washington, joined 4-H and participated in 4-H clothing, crafts, rock, and insect projects.

Citizenship education. Over 6,000 4-H'ers, leaders, county and State 4-H agents from almost all States participated in 4-H Citizenship Short Courses held at the National 4-H Center this year. In addition to general sessions on learning about what citizenship means, young people participated in mini-university workshops on such topics as: Economic Choice and the Citizen, To Be or Not to Be Married, Communications, Values and Human Relations, Conservation and Environment, Community Development, Man's Freedom and Dignity, World Problems, and Youth Involvement in the Nation's Government.

NATIONAL AGRICULTURAL LIBRARY

Purpose Statement

The Organic Act of 1862, establishing the Department of Agriculture, set forth a basic mission "to acquire and to diffuse among the people of the United States useful information on subjects connected with agriculture in the most general and comprehensive sense of the word," and placed upon the Secretary the responsibility to "procure and preserve all information concerning agriculture which he can obtain by means of books. . . ." The Library was established in the same year by the first Commissioner of Agriculture.

Designated the National Agricultural Library in 1962, the Library works closely with the Library of Congress and the National Library of Medicine to fulfill the functions of a national library for the United States.

The National Agricultural Library provides access to the world's agricultural literature. Both current and historical information is collected and organized for effective utilization by a wide range of users. Library services include reference assistance, preparation of bibliographic files, and loan or photoduplication of library materials.

The library services of the National Agricultural Library are carried out through the main library located at Beltsville, Maryland, and through a branch library in Washington, D.C., which includes the law collection and social science materials.

In addition, several agencies of the Department maintain and finance their own libraries. These libraries are situated at field locations where concentration of work and research staff warrants on-site library services. The Director of the National Agricultural Library prescribes library policy, standards, and procedure for these field library services and exercises such controls as are needed to coordinate services in the Department.

Available Funds and Man-Years
1973 and Estimated, 1974 and 1975

Item	Actual		Estimated		Budget Estimate	
	1973		Available, 1974		1975	
	Amount	Man-Years	Amount	Man-Years	Amount	Man-Years
National Agricultural Library .	\$4,226,750:	188	\$4,468,750:	185	\$4,858,750:	175
Obligations under other USDA	:	:	:	:	:	:
appropriations:	:	:	:	:	:	:
Agricultural Research Service :	:	:	:	:	:	:
Special bibliographic ser-	:	:	:	:	:	:
vices	16,350:	1	6,000:	- -	6,000:	- -
Services provided for the	:	:	:	:	:	:
utilization of space	- -	- -	87,000:	- -	87,000:	- -
Food and Nutrition Service:	:	:	:	:	:	:
Information and Educational	:	:	:	:	:	:
Materials Center	166,811:	3	170,000:	4	190,000:	4
Miscellaneous USDA Reimburse-	:	:	:	:	:	:
ments	- -	- -	10,000:	- -	10,000:	- -
Working Capital fund:	:	:	:	:	:	:
For microfilm and photoprint	:	:	:	:	:	:
reproductions and magnetic	:	:	:	:	:	:
tapes	60,806:	4	36,000:	2	36,000:	2
Total, Other USDA Appropriations:	243,967:	8	309,000:	6	329,000:	6
Total, Agricultural Appropriation:	:	:	:	:	:	:
Bill	4,470,717:	196	4,777,750:	191	5,187,750:	181
Other Federal Funds	60,620:	- -	67,250:	- -	- -	- -
Total, National Agricultural	:	:	:	:	:	:
Library	4,531,337:	196	4,845,000:	191	5,187,750:	181

End-of-Year Employment:	1973	1974	1975
	<u>Actual</u>	<u>Estimated</u>	<u>Estimated</u>
Permanent full-time	180	170	170
Other	20	20	20
Total	<u>200</u>	<u>190</u>	<u>190</u>

(a) NATIONAL AGRICULTURAL LIBRARY

Appropriation Act, 1974	\$4,226,750
Budget Estimate, 1975	<u>4,858,750</u>
Increase in Appropriation	+632,000

Adjustments in 1974:

Appropriation Act, 1974	\$4,226,750
1974 transfer from ASCS for pay costs	<u>+242,000</u>
Adjusted base for 1975	4,468,750
Budget Estimate, 1975	<u>4,858,750</u>
Increase over adjusted 1974	<u>+390,000</u>

SUMMARY OF INCREASES

(On basis of adjusted appropriation)

	<u>1974</u>	<u>Increase</u>	<u>1975</u> <u>Estimate</u>
Acquisition and preservation of agricultural materials.....	\$1,075,700	+\$200,000	\$1,275,700
GSA space rental costs.....	- -	+152,000	152,000
Annualization of the pay cost increase effective in FY 1974	242,000	+38,000	280,000
All other.....	<u>3,151,050</u>	- -	<u>3,151,050</u>
Total available.....	<u>4,468,750</u>	<u>+390,000</u>	<u>4,858,750</u>

PROJECT STATEMENT

(On basis of adjusted appropriation)

Project	1973	1974 :(estimated):	Increase	1975 :(estimated)
1. Agricultural Library services for research and education.....	\$4,199,143	\$4,468,750	+\$390,000(1)	\$4,858,750
Unobligated balance.....	27,607	- -	- -	- -
Total available or estimate.....	<u>4,226,750</u>	<u>4,468,750</u>	<u>+390,000</u>	<u>4,858,750</u>
Proposed transfer for pay increase cost.....	- -	-242,000		
Total, appropriation.....	<u>4,226,750</u>	<u>4,226,750</u>		

EXPLANATION OF PROGRAM

The research and educational activities of the National Agricultural Library are authorized by the Organic Act of 1862, which established the Department of Agriculture. That Act stipulated a basic mission "... to acquire and to diffuse among the people of the United States useful information on subjects connected with agriculture and in the most general and comprehensive sense of that word..." and charged the Secretary with the responsibility "to acquire and preserve in his department all information concerning agriculture which he can obtain by means of books...". The Library was established that same year by the Commissioner of Agriculture and was designated the National Agricultural Library on March 23, 1962, in Secretary's Memorandum No. 1496.

Acquisition of agricultural materials continues to be a major activity in carrying out the mission of the Library. Other primary activities for fiscal year 1974 are as follows:

<u>Types of Activities</u>	<u>Estimated Productivity</u>
Addition of serial issues	250,000
Citations published in the <u>Bibliography of Agriculture</u>	100,000
Records published in the <u>NAL Monthly Catalog</u>	18,000
Loans and photocopies provided	140,000
Reference inquiries	30,000
Information packages	500

Serial publications are recognized as a valuable source of information on new research, continuing progress, and final conclusion. Heavy emphasis is placed, therefore, on the development of a comprehensive current serial collection.

The Library's major program in bibliographic control is the compilation of the computerized CAIN data base. The data base is the basis for a variety of information dissemination techniques, with the commercially produced Bibliography of Agriculture and the National Agricultural Library Catalog foremost among them. The citations published monthly in the Bibliography of Agriculture are carefully selected to represent the most important publication of worldwide agricultural research as it appears in conference proceedings, journal articles, and monographs. The records published in the NAL Monthly Catalog are books or journal titles recently processed for addition to the NAL collection.

Resources of the NAL collection are made available through direct loan, inter-library loan of books, and photocopy of documents with emphasis on journal articles. Literature requests of USDA field employees in several areas of the U.S. are processed with the cooperation of the land-grant university libraries on an experimental basis. The resources of these libraries are used first by field employees, with NAL serving as back-up.

Further exploitation of collection resources is developed through reference inquiries and information packages. Reference inquiries are subject questions requiring more than 5 minutes, but less than 4 hours of professional effort to answer. Information packages include a bibliography, a collection of documents, a literature survey, or advice and assistance to technical information programs requiring continuing effort or a substantial support one-time effort of more than four hours.

The other major activity, not included in the above types of activities, is the preservation of the collection. Preservation involves the microfilming or restoration of important research materials deteriorating because of poor quality paper, unbound condition, or age. Materials selected for preservation include USDA documents, unbound serial issues, newspapers, and rare books.

JUSTIFICATION OF INCREASE

- (1) An increase of \$390,000 for National Agricultural Library services for research and education consisting of:

GSA space rental costs.....	+152,000
Annualization of the pay cost increase effective in F. Y. 1974	+38,000
Acquisition and preservation of agricultural materials.....	+200,000

The program increase of \$200,000 consists of:

(a) An increase of \$160,000 for acquisition of agricultural materials (\$400,000 available in 1974).

Need for increase: Increased costs of acquiring library materials have a substantial impact on other libraries, including those of the land-grant institutions. As these libraries reduce their respective acquisition programs, the value and use of a strong national collection in agriculture, such as that at NAL, take on expanded significance.

The Library has received no budget increase since 1971 while unit costs of books and serials in agriculture and related sciences have increased at a rate exceeding 10 percent annually in 1972, 1973, and 1974. Ten percent of the \$400,000 acquisition budget represents a \$40,000 cost increase in each of the last 3 fiscal years for a total of a \$120,000 increase needed in fiscal year 1975 simply to enable the Library to acquire materials on a basis equivalent to the funding for fiscal year 1971.

The number of items published of interest to the Library's users has increased sharply since fiscal year 1971. In addition, subject areas of interest to the agricultural community have undergone expansion in these last few years. To begin to acquire those items from among the additional publications which are of greatest potential benefit, the Library is requesting a \$40,000 increase.

Plan of Work: The requested increase would allow the Library to acquire materials at current prices as they are published.

(b) An increase of \$40,000 for preservation of agricultural materials (\$91,000 available in 1974).

Need for increase: The Library has an archival responsibility to maintain a usable collection of publications of the Department of Agriculture. There are approximately 40,000 such items in the collection which remain to be microfilmed, to assure their preservation for research and historical purposes. No filming of these materials has been accomplished since 1969.

The Library has an estimated backlog of 30,000 volumes of serials which cannot be bound without additional funding. Each year within the recent past this backlog has grown. Additional funds are needed to hold even with materials acquired in the current year.

There are an estimated 200 titles in the Library's collection of newspapers. Because newsprint deteriorates so rapidly, the Library has begun microfilming these titles for preservation. Thus far, only 25 of these sets have been or are being microfilmed.

Through the years the Library has acquired over 6,000 rare items valuable because of their subject content, as well as their bibliographic rarity. Restoration of this collection has begun, but almost 5,000 volumes remain to be restored.

An additional increase of \$40,000 is required to enable the Library to deal with substantial backlogs of materials requiring preservation. In the past few years preservation backlogs have been reduced very slowly. To reduce the backlog in each of these programs at a slightly accelerated pace, \$40,000 in additional funds would be used in the following areas:

Microfilming USDA publications.....	\$15,000
Microfilming deteriorating publications....	10,000
Binding deteriorating publications.....	10,000
Rare book binding.....	5,000

Plan of work: The requested increase would allow the Library to reduce the backlog of publications in need of restoration at an accelerated pace.

NATIONAL AGRICULTURAL LIBRARY

STATUS OF PROGRAM

The National Agricultural Library collects agricultural information worldwide and provides it to researchers within the Department of Agriculture and to scientists, students, and other individuals in agricultural colleges and universities, industry, and throughout rural America.

Current Activities: The Library is responsible for all library-related resources and services in the Department of Agriculture and administering its unique collection of books, journals and other information materials in such a way as to sustain and expand the nation's wealth of knowledge in the agricultural sciences.

The Library acts as a focal point for the Department in the development of cooperative efforts in the library and related information areas with other Federal agencies and with educational institutions in each state.

The Library continually seeks to meet the growing information needs of a wide variety of users through the application of new technology and the development of an outstanding collection of library materials.

Selected Examples of Recent Progress:

Collection Utilization: The National Agricultural Library collection is unrivalled in all phases of agriculture and allied sciences. A machine-readable Cataloging and Indexing (CAIN) data base of bibliographic information on this collection was created in 1970 and has grown to over 450,000 records. An "instant recall" system has been applied to these records, which can be called up from computer storage banks within seconds, displayed on a TV-like screen, and printed out on paper by a highspeed typewriter. This system serves the bibliographic needs of the U. S. Department of Agriculture through the Library. Current efforts are directed towards making the availability of the system known to the agricultural community.

A computer-produced list of 1000 Selected Journals in Agriculture and Related Subjects has been published to assist NAL users to help themselves in obtaining prompt, accurate responses to their requests for journal articles. Other USDA agencies are using our machine-readable data base of journal titles to further their own researches. Animal and Plant Health Inspection Service is participating in the preparation of several lists of titles of interest to veterinarians. Forest Service is identifying forestry-related titles. A magnetic tape listing all journal titles in the data bank has been provided Agricultural Research Service; from this master list, ARS will be able to produce specialized lists of journal titles tailored to specific research needs.

Collection Expansion: A grant has been awarded the University of California (Davis) Library to identify, acquire, and index agricultural items published in California, Arizona, Nevada, Washington (State) and Hawaii. Information on these resources will be input to the CAIN data base and published in the Bibliography of Agriculture.

Document Delivery to USDA Field Personnel: Improved service to USDA employees in the field is being implemented through arrangements with several land-grant universities. For example, a grant has been awarded the University of Georgia Libraries to establish a Document Delivery System serving USDA employees in Alabama, Florida, Georgia, Louisiana, Mississippi, and South Carolina. This system proposes to speed delivery of research materials through utilization of land-grant libraries, services, and collections.

Information Dissemination: Upgrading the training and educational levels of school food service personnel is a primary objective of the Food and Nutrition Information and Educational Materials Center. Three important products produced by the Center - a Catalog, Exhibit, and Slide-Tape Presentation - provide major links between the Center and its user community. The catalog contains 2,366 annotated citations to books, pamphlets, audio-visuals, and journal articles on food service and nutrition education. The Center has also distributed three bibliographies prepared under contract by the Society for Nutrition Education.

Publication: The quinquennial edition of The National Agricultural Library Catalog 1966-1970 has been published by Rowman and Littlefield in 12 volumes. This cumulation of the monthly catalog supplements the 73-volume Dictionary Catalog. It contains entries for all books, periodicals, and other materials cataloged by NAL since January 1966.

The following is a geographic breakdown of obligations and man-years by location:

	1974 <u>Estimated Available</u>	
	<u>Amount</u>	<u>Man-Years</u>
Washington, D. C.	248,000	16
Beltsville, Md.	<u>4,597,000</u>	<u>175</u>
Total, NAL.....	4,845,000	191

(b) Library Facilities

PROJECT STATEMENT

The following statement reflects estimated obligations on the basis of available funds:

Project	1973	1974 (estimated)	Increase or Decrease	1975 (estimated)
1. Construction of Facilities (obligations).....	\$60,620	\$67,250	-\$67,250	- -
Unobligated balance available, start of year.....	-127,870	-67,250	67,250	- -
Unobligated balance available, end of year.....	67,250	- -	- -	- -
Total available or estimate.....	- -	- -	- -	- -

Funds for the preparation of plans, specifications, and drawings for new facilities were appropriated in 1964.

Funds were appropriated in Fiscal Year 1966 for construction of the new Library at Beltsville, Maryland. The construction contract was awarded in November 1966. The cornerstone of the building was laid on September 28, 1967. During fiscal year 1969, the building was accepted by GSA as "substantially completed" and the Library staff and collection were transferred to the new building between May 15, 1969 and June 15, 1969. The new building was accepted by GSA as "completed" on October 7, 1971.

The balances brought and carried forward are to be used to purchase and install an emergency generator and a standby boiler.

STATISTICAL REPORTING SERVICE

Purpose Statement

The Statistical Reporting Service was established by Secretary's Memorandum No. 1446, Supplement 1, of April 3, 1961 under Reorganization Plan No. 2 of 1953 and other authorities. The Service was created to give coordinated leadership to the statistical reporting research and service programs of the Department. It provides a channel for the orderly flow of statistical intelligence about the agricultural economy of this country. The primary responsibilities of this Service are the National and State crop and livestock estimates and coordination and improvement of the Department's statistical program requirements. Service programs are organized in the following major areas:

1. Crop and livestock estimates. This includes estimates of production, supply, price, and other aspects of the agricultural economy; conduct of enumerative and objective measurement surveys; preparation and issuance of the official National and State estimates and reports of the Department relating to acreages, types and production of farm crops, number of livestock on farms, livestock products, stocks of agricultural commodities, value and utilization of farm products, prices received and paid by farmers, and other subjects as required.
2. Statistical research and service. This includes review, clearance, coordination, and improvement of statistics in the Department; research on and development of improved statistical techniques used in gathering and evaluating statistical data, data processing activities, with related systems analysis and research, programming and processing of data.
3. Work Performed for Others. Services are performed for other Federal, State, and private agencies, on a reimbursable or advance payment basis. These services consist primarily of conducting surveys and performing related statistical data collection activities. They also include participation in the Agency for International Development foreign visitor training program, technical consultation and support and technical assistance programs abroad under participating agency service agreements.

The Statistical Reporting Service maintains a central office in Washington, D.C., but a large part of the crop and livestock estimates program is carried out through 44 State offices serving the 50 States. Most State Statistical Offices are operated as joint State and Federal services through cooperative arrangements with various State agencies.

Available Funds and Man-Years
1973 and Estimated, 1974 and 1975

	Actual 1973	Man- Years	Estimated Available, 1974	Man- Years	Budget Estimate 1975	Man- Years
	Amount		Amount		Amount	
Statistical Reporting Service:	\$22,738,200	1,312	\$24,074,200	1,300	\$26,938,000	1,364
Obligations under other USDA appropriations:						
Agricultural Marketing Service, for milk price data.....	31,581	3	33,800	3	33,800	3
Agriculture Stabilization and Conservation Service:						
Data on feed grain programs, wool and mohair prices, rice, winter wheat, January intentions, and voter registration ...	318,147	26	222,800	17	222,800	17
Export Sales Reporting ...	--	--	390,000	12	--	--
Economic Research Service, for data on fertilizer, land practices, farm popu- lation, cost of cotton, tobacco, pesticides, farm tractor prices, truckers, livestock transportation, breeding cattle, cost of production, and waste management.....	347,749	31	353,900	32	712,000	71
Federal Crop Insurance Cor- poration, for acreage, yield and production data on insured crops.....	163,531	14	172,000	14	172,000	14
Miscellaneous Reimbursements:	12,496	1	77,500	6	239,400	24
Total, other USDA Appro- priations.....	873,504	75	1,250,000	84	1,380,000	129
Total, Agriculture Appro- priation Bill.....	23,611,704	1,387	25,324,200	1,384	28,318,000	1,493
Other Federal Funds.....	484,388	21	489,650	26	554,500	29
Non-Federal Funds.....	159,861	9	176,350	13	174,500	13
Total, Other Funds.....	644,249	30	666,000	39	729,000	42
Total, Statistical Reporting Service a/.....	24,255,953	1,417	25,990,200	1,423	29,047,000	1,535

a/ The above table reflects FY 1973 on a comparability basis with FY 1974 and FY 1975. Fiscal year 1973 does not reflect \$954 thousand and 24 man-years for data processing work. These dollars and man-years are in the Working Capital Fund Schedules.

	1973 Actual	1974 Estimated	1975 Estimated
End-of-year Employment:			
Permanent full-time.....	1,066	1,071	1,082
Other.....	1,390	1,510	1,510
Total.....	2,456	2,581	2,592

Statistical Reporting Service

Appropriation Act, 1974.....	\$22,859,200
Budget Estimate, 1975.....	26,938,000
Increase in Appropriation.....	<u>+4,078,800</u>

Adjustments in 1974:

Appropriation Act, 1974.....	\$22,859,200	
Transfer to General Services Administration for rental of space.....	-5,000	
Transfer to the Economic Research Service for marketing research a/.....	-215,000	
Transfer from the Office of Management Services for information activities b/.....	+78,000	
Transfer from "Cropland Adjustment Program," Agriculture Stabilization and Conservation Service for pay costs.....	<u>+1,357,000</u>	
Adjusted base for 1975.....		24,074,200
Budget estimate, 1975.....		26,938,000
Increase over adjusted 1974.....		<u>+2,863,800</u>

a/ On April 28, 1973, the market research functions were transferred from the Statistical Reporting Service to the Economic Research Service. This transfer of 8 full-time personnel was to conform with OMB guidelines which called for a clear separation of research and data collection functions.

b/ On June 22, 1973, the information services, which had been performed on a centralized basis by the Office of Management Services for a number of small USDA agencies, were transferred from OMS to the agencies involved. This transfer provided SRS with an additional 5 full-time employees.

SUMMARY OF INCREASES
(On basis of adjusted appropriation)

	<u>1974</u>	<u>Increases</u>	<u>1975 Estimate</u>
Multiple frame cattle and hog surveys.....	\$2,081,200	+\$754,700	\$2,835,900
Export sales program.....	--	+463,000	463,000
Remote sensing.....	70,200	+193,000	263,200
GSA Space rental costs.....	--	+1,213,800	1,213,800
Annualization of the pay cost increase effective in 1974.....	1,357,000	+239,300	1,596,300
All other.....	20,565,800	--	20,565,800
Total available.....	<u>24,074,200</u>	<u>+2,863,800</u>	<u>26,938,000</u>

PROJECT STATEMENT
(On basis of adjusted appropriation)

Project	1973	1974 (estimated)	Increases	1975 (estimate)
1. Crop and livestock estimates.....	\$22,075,420	\$23,464,200	+\$2,631,800 (1)	\$26,096,000
2. Statistical research and service.....	546,066	610,000	+232,000 (2)	842,000
Unobligated balance.....	116,714	--	--	--
Total available or estimate.....	\$22,738,200	24,074,200	+2,863,800	26,938,000
Transfer to ERS for marketing research.....	+215,000	+215,000		
Transfer from OMS for information activities.....	-78,000	-78,000		
Transfer to GSA.....	--	+5,000		
Proposed transfer for pay costs.....	--	-1,357,000		
Total, appropriation.....	22,875,200	22,859,200		

EXPLANATION OF PROGRAM

The Statistical Reporting Service (SRS), U.S. Department of Agriculture, prepares estimates of crops, livestock, poultry, dairy, prices, and related agricultural topics. SRS annually issues some 550 reports necessary for the orderly operation of the Nation's agricultural industry. In addition, 44 Federal-State field offices serving the 50 States release about 10,000 reports dealing with State farming activities.

Crop reports provide estimates of acreages farmers intend to plant in the coming season, the acres planted and harvested, production disposition of the crop, and remaining stocks. Forecasts of yield and production are issued monthly during the growing season based on information voluntarily provided by farmers and from counts, measurements, and observations made in sample fields by SRS enumerators.

Livestock and poultry reports include estimates of animals on farms and ranches, or in feedlots. Estimates are made of breeding and production intentions; year-end estimates cover production and disposition of major livestock and poultry species. SRS also tracks slaughter numbers and meat production.

Dairy reports indicate milk cows, monthly and annual milk production, and use of milk. Production of major manufactured dairy products is reported weekly and monthly.

Price reports show prices received by farmers for nearly 200 products and prices paid for about 600 items needed for production or family living. Reports cover indexes of prices received and paid, parity prices, and season average prices of crops, livestock, and livestock products.

Other reports deal with labor and wages, fertilizer, seeds, bees and honey, mink, naval stores, stocks of major commodities, cold storage holdings, and other agricultural elements.

SRS, the USDA's chief fact-gathering agency, began crop and livestock estimating more than a century ago to help farmers judge the value of their production. Farmers were greatly handicapped then, and would be now in dealing with commodity buyers who had access to more current and detailed market condition information.

The scope of agricultural estimates has increased with the demands for information by producers, processors, manufacturers, and Government program planners, but the original goal has remained steady--to help farmers market more effectively.

JUSTIFICATION OF INCREASES

(1) An increase of \$2,631,800 for crop and livestock estimates consisting of:

(a) GSA Space rental costs.....	+\$1,182,800
(b) Annualization of pay cost increases effective in fiscal year 1974.....	+\$231,300
(c) Multiple Frame Cattle and Hog Surveys (\$2,081,200 available in 1974).....	+\$754,700

Need for increase: The increase requested would provide for adding 7 livestock States to the 29 States currently in the multiple frame sampling program, bringing the total number of States in the program to 36. Since the hog and cattle samples are independent, the proposed program will actually add 9 States to the hog program and 6 States to the cattle program, thereby contributing significantly to the Agency's continuing efforts to utilize sound sampling procedures and improve the accuracy of National and State livestock estimates. Some States formerly in the program for only one livestock specie would now have a multiple frame sample for hogs and cattle. This is the final increment of funds needed for implementation of multiple frame sampling for cattle and hogs to a fully operational level encompassing 95 percent of the cattle and hogs in the United States.

Congress provided funds in fiscal year 1970 to initiate the program of multiple frame surveys with primary emphasis on cattle and hogs. The total multiple frame sampling program was to be put into operation on an incremental basis with subsequent steps based on the experiences and needs demonstrated. Congress provided additional funds in 1971 to expand the program which enabled the Agency to begin quarterly multiple frame hog surveys in the 10 Corn Belt States accounting for nearly 75 percent of the U.S. hog and pig inventory and for semi-annual multiple frame cattle surveys in 16 States accounting for slightly over 50 percent of the U.S. cattle inventory. Congress provided additional funds in fiscal year 1973 to further expand the coverage of the program and improve the accuracy of National and State livestock estimates. These funds also enabled the Agency to initiate mid-year inventory estimates of cattle numbers and to improve calf crop estimates. The 13 States added to the program in fiscal year 1973 accounted for an additional 35 percent of the U.S. cattle inventory and an additional 10 percent of the U.S. hog and pig inventory bringing the total coverage of cattle up to 88 percent and hogs up to 86 percent.

The importance of maintaining accurate data on livestock cannot be over-emphasized, especially in view of the current production cost considerations in the livestock industry. Producers' plans for modifying their production capabilities are often contingent upon the amount of information available to them. Accurate data on prospective supplies and production costs are essential to maintaining the increasingly critical production capacity of livestock producers. The expansion of the multiple frame sampling program to include Alabama, Mississippi, Michigan, North Dakota, Oklahoma, Pennsylvania, South Carolina, Tennessee and Virginia in the hog sample and Arizona, Louisiana, Michigan, Oregon, Virginia and Washington in the cattle sample in fiscal year 1975 would enable the agency to meet the critical demand for reliable livestock estimates.

Plan of work: Multiple frame cattle and hog surveys utilize two frames:

(1) A list of farms stratified by size of livestock operation, and (2) the area sample of segments used in the June and December Enumerative Surveys. The expensive area frame sample complements the more economical list frame by providing representation for farms not on the list frame. Emphasis will be given to list building, sample design and survey procedures to take advantage of the economy of multiple frame sampling while improving the accuracy of cattle and hog estimates. The increase in the number of States under the program will involve SRS personnel in the preparation and processing of additional questionnaires and surveys. Data collection procedures include the use of mail inquiries and telephone and personal interviews. The salaries, travel, and other support costs for 43 man-years are needed for this program extension.

(d) Export Sales Reporting Program (\$0 available in 1974)..... +\$463,000

Need for increase: The increase requested would enable the Agency to continue to carry out the requirements of Section 812 of the Agriculture and Consumer Protection Act of 1973. The Act requires exporters to report sales of wheat, wheat flour, feed grains, oilseeds, cotton and products thereof, and other commodities to the Secretary of Agriculture on a weekly basis specifying the: (a) type, class, and quantity of the commodity to be exported; (b) the marketing year of shipment; and (c) destination, if known.

The Export Sales Reporting Program of the Agency was initiated in fiscal year 1974 as directed by the Secretary of Agriculture and funded through a reimbursable agreement with the Agricultural Stabilization and Conservation Service. Data covering 28 commodities on export sales outstanding, exports made, and amendments or cancellations of existing export contracts made during the week were collected on a weekly basis, tabulated and prepared for release to the public. These releases contain totals of export sales outstanding by commodity by marketing year, along with detail for specific countries or geographic areas.

Plan of work: Exporters of each designated agricultural commodity would continue to submit weekly reports to the Agency on the type, quantity, class of commodity to be exported, the marketing year of shipment, and destination, if known. The Agency would tabulate and publish the data reported each week following receipt of the information. The major cost factors considered for the Export Sales Reporting Program were the volume of data to be tabulated, the weekly nature of the report, and the estimated data processing costs. Salaries and support costs for 16 full-time personnel are necessary to prepare these reports.

(2) An increase of \$232,000 for statistical research and service consisting of:

GSA Space rental costs.....	+\$21,000
Annualization of pay cost increases effective in fiscal year 1974.....	+\$8,000
Remote Sensing research (\$70,200 available in 1974)..<	+\$193,000

Need for increase: The increase requested would enable the Agency to conduct research to find practical means of reducing (converting) huge volumes of sensor recordings from the Earth Resources Technology Satellite to useful estimates of agricultural land use.

Remote sensing technology has developed to a point where the capacity to collect data by sensors is expanding rapidly. Much emphasis is now being placed on achieving practical use of this technology. The information obtained from the sensors must be subjected to complicated interpretation and processing to achieve useful results. Individual crops register differently on sensors under varying conditions and the relationship between sensor indications and actual ground truth must be established. Formulae for converting remote sensor data to estimates must be developed and accuracy and costs of such estimates determined.

Benefits accruing from use of remote sensing would be greater objectivity of measurements, more geographical detail in estimates, and reduction of reporting burden on farmers.

Plan of work: The Agency's remote sensing research would focus on development of statistical techniques for reducing remote sensor and ground truth data to estimates of livestock, crop acreage and production. The funds requested would be used to collect simultaneously: remote sensor, low altitude aerial photographic and ground truth data on test sites in 5 States producing the principal field and tree crops in the United States. Agency plans also include the development of

advanced mathematical techniques for remote sensor pattern recognition and discriminate analysis, sampling procedures, objective yield forecasting, programming and data processing capabilities, and equipment to facilitate remote sensing data manipulation. The proposed cost estimate of the expanded remote sensing research program includes salaries and support costs for five man-years, ADP summarization costs, and the acquisition of satellite and low altitude data.

STATUS OF PROGRAM

The Statistical Reporting Service administers the Department's programs of collecting and publishing current National and State agricultural statistics. Statistical data provided by the Service on food and agriculture are essential in making orderly production and marketing decisions.

SRS programs are organized in the following major areas: (1) Crop and livestock estimates, (2) Statistical research and service, and (3) work performed for others.

CROP AND LIVESTOCK ESTIMATES

Current Activities: This program includes collecting, analyzing and publishing basic production and marketing data on agriculture; number of farms and acreage in farms; acreage, yields, production, stocks, value and utilization of crops; numbers and production of livestock and poultry; prices received by farmers for products and prices paid for commodities and services for living and production; the parity index; farm employment and wage rates; quantities of food in cold storage; and other relevant aspects of the agricultural economy.

Estimates for about 150 crops and 50 livestock items are published in some 550 reports each year. All information is made available to the news media and public at scheduled release times.

Thousands of farmers, processors, merchants and others voluntarily submit reports about crop, livestock and other agricultural activities. These reports are supplemented by field observation, objective yield measurements, and other data to provide basic information for summaries issued to the public.

The principal goals of this program are to (a) increase the accuracy and dependability of National and State data, (b) provide additional data and services needed for commercially important products, (c) conduct regular commodity program reviews to assure that statistical information is provided in an efficient manner and is satisfying user needs, and (d) speed up the release dates and the distribution of reports.

Selected Examples of Recent Progress

A. Activities to Increase Accuracy and Dependability of Data

1. December and June Enumerative Surveys: In Fiscal Year 1973, the December and June Enumerative Surveys were again conducted on a fully operational basis in the 48 conterminous states.
 - a. Program Activities: The December Enumerative Survey obtained information on livestock, poultry and fall seedings of wheat from 19,830 area tracts selected from the previous June Enumerative Survey. Sample selection concentrated on tracts which had or reported intentions to have winter wheat or livestock. In addition, a sample of 8,523 large livestock and poultry firms was selected from a list of 25,256 such firms.

The June Survey obtained information on planted acreages of crops, land use, livestock and poultry numbers, farm labor, and farm numbers from a sample of 16,504 area segments. In addition, a sample of 9,647 livestock and poultry producers was selected from a list of 24,594 large operators. This is the Agency's largest probability survey and utilizes about 1,500 enumerators.

The June Enumerative Survey provides data requested by other agencies; for example, use of land set aside to government programs, farm population information and agricultural labor data.

- b. Area Frame Development and Maintenance: Work continued at Iowa State University on the construction of land-use area frames to replace obsolete sampling frames. Frames were completed for Nebraska, Arkansas and Texas.

Approximately 2000 new sample segments were selected in the U.S. New samples were drawn for Arizona, New Mexico, Missouri and Nebraska and materials (aerial photography and highway maps) were provided for their enumeration in 1973.

In addition, new photography and maps were provided for approximately 1100 segments which were rotated into the sample in 1973 to relieve respondent burden. To facilitate the ordering and usage of new aerial photography, three microfilm viewers and a microfilm library of all ASCS photographs were obtained. This acquisition improves the accuracy of orders and speed in obtaining photography. Current photography is essential in all surveys utilizing area frame sampling.

- 2. Acreage Update Survey: To update acreage data collected during the June Enumerative Survey, over 10,000 tract operators were contacted in July to determine changes between planting intentions and actual plantings.

- 3. Multiple Frame Livestock and Poultry Surveys:

- a. Program Expansion: These surveys utilize two sampling frames: (1) A list of farms stratified by size of livestock operations, and (2) the area sample of segments used in the June and December Enumerative Surveys. Farms in the area sample are matched with the list frame to identify duplication. Area sample farms that are not on the list are identified as non-overlap tract operators and provide data for the livestock not represented by the list. Procedures for reducing the time required to establish the non-overlap domain were developed and an attempt was made to reduce the reporting burden on area tract operators.

There were 13 States added to the Multiple Frame Cattle and Hog Program in Fiscal Year 1973 bringing the total to 29 States in the program. Fourteen States are now in the hog program and 28 States in the cattle program. Ten States (Iowa, Illinois, Missouri, Kansas, Nebraska, Indiana, Ohio, South Dakota, Minnesota, and Wisconsin) made quarterly hog and January 1 and July 1 cattle estimates. Florida, New Mexico, Mississippi, California, Tennessee, and Wyoming made cattle estimates on January 1 and July 1. Four States (Kentucky, North Carolina, Georgia and Texas) were added to the quarterly hog program beginning with the March 1, 1973 survey. Kentucky, Georgia, Texas, New York, Pennsylvania, Alabama, Arkansas, Oklahoma, Colorado, Montana and Idaho were added to the multiple frame cattle program for the July 1, 1973 estimate.

Virginia, Alabama and Arkansas continued the multiple frame approach instituted last year in estimating chicken inventories and monthly layers. Probability samples, selected for monthly surveys, were rotated to reduce respondent fatigue and provide more up-to-date control data.

- b. List Updating and Maintenance: During the year all States in the program updated their list frames at least once and selected new samples. Sampling errors were evaluated and monitored continuously to identify critical needs in updating. This portion of the program required a considerable amount of time, effort, and expense.
- c. Coordination of Livestock Multiple Frame with Enumerative Surveys: To reduce duplicate efforts, States were required to update lists of large operators for enumerative surveys and list frames for Multiple Frame Surveys simultaneously. The objective was toward a single livestock list for each State Statistical Office.

4. Objective Yield Surveys:

- a. Wheat, Corn, Cotton and Soybeans: Objective Yield Surveys for wheat, corn, cotton and soybeans continued in the major producing States. The overall sample size was unchanged from the previous year but some shifts in allocation among States were made to improve efficiency. There were 17 States in the wheat program with 2,510 samples, 19 States for corn with 3,200 samples, 14 States for cotton with 2,510 samples and 14 States for soybeans with 1,675 samples.

Following extensive training, about 700 enumerators interviewed farm operators and made field counts and observations monthly through the growing season. The surveys are concluded with post-harvest observations to determine harvesting losses. Results from these surveys were used as the major indicators for yield forecasts and estimates.

Fertilizer data relating to kind and application rates were obtained for wheat, corn, cotton, and soybeans. Information on application of pesticides was also obtained on one-half of the corn and soybean samples.

- b. Potatoes: In the spring of 1973, a multiple frame probability acreage survey was conducted in the 12 major fall potato producing States. List frames were developed in each State to complement the area frame already in use. Results of the survey aided in estimating 1972 planted acreage.

Pre-harvest and post-harvest potato objective yield surveys were continued in Maine, Minnesota, North Dakota, Idaho, Washington and Oregon using appropriated funds, while the Wisconsin survey used matching funds from State and Federal sources. Indications from these surveys provided the primary yield indicator for potatoes.

- c. Tart Cherries: Funds for an operational tart cherry objective yield survey in Michigan were again provided by that State. In addition to providing data for the mid-June forecast of production using a sample of 300 orchards, data were collected to update forecasting parameters and to determine harvesting losses.

5. Quarterly Agricultural Labor Surveys: These surveys utilize the multiple frame approach. These surveys are designed to provide estimates of numbers and wage rates for workers hired by farm operators. Workers hired by agricultural service firms and crew leaders, which are having an increasing effect on agricultural employment, are not included in the estimates. The program was expanded in October 1972 to include 16 States on a fully operational basis. The remaining States had sample sizes sufficient to provide regional estimates. Each quarter farm operators selected from the June Enumerative Survey were mailed questionnaires while the operators from the list frame were enumerated by personal visit or telephone.

6. Quarterly Probability Farm Grain Stocks Surveys: The probability farm grain stocks survey was conducted quarterly in the 12 North Central States. Respondents were surveyed by mail, telephone and personal interview. Estimates of total stocks of small grains (wheat, oats, barley, rye) and flaxseed were made in October while corn, grain sorghum and soybean stocks estimates were made in January.

B. Activities to Provide Additional Data and Services

1. Farm Production Expenditure Survey: A pilot program of an annual farm production expenditure survey was implemented in February 1973 to provide the basis for revisions of parity index weights at regular predetermined intervals and current data for improving the Department's estimates of farm income.

A sample of 558 area segments and 1,350 large operators was used to obtain 2,000 usable questionnaires for the National survey coordinated by 15 SSO's. Editing and summarization will continue into Fiscal Year 1974.

Plans are to use a five-year cycle that will involve a survey of farm production expenditures for four consecutive years and family living expenditures the fifth year. This sequence will permit timely revision of the parity index weights.

2. Farm Family Living Expenditure Survey: In addition to updating weights used in computing the Index of Prices Paid, the survey identified the buying habits of farm families and average expenses per family.

The first phase of the survey was conducted in April 1973 for expenditures incurred in January-March 1973, the remaining two phases will be in Fiscal Year 1974.

Thirty-seven States are involved in this survey with a total of 1,765 area segments producing approximately 2,500 usable questionnaires.

3. White Corn Acreage and Production Surveys: The Multiple Frame Survey for white corn estimates was continued in 10 major producing States. Estimated planted acreage was included in the July 1972 Crop Report; final acreage and production estimates were reported in the Annual Crop Summary. The 1973 March Acreage Intentions Report included white corn for the second time.
4. Special A&P Follow-up Survey: Wet weather severely delayed the harvest of 1972 corn, sorghum grain, and soybean crops, and considerable acreage remained unharvested at the time of the fall acreage and production surveys. A special follow-up survey was conducted along with the March 1973 Intentions Survey to measure production from these late harvested acres. The final State estimates for these crops were published with the March 1973 Prospective Plantings Report.
5. Weekly Weather and Crop Bulletin: A National Weekly Weather and Crop Bulletin continued to be published in cooperation with the U.S. Department of Commerce. This publication has wide public interest because it relates to current conditions and progress of crops and helps bridge the information gap between monthly crop reports. News reporters, government economists, and industry representatives followed the report closely as abnormally wet weather caused an extremely late harvest of 1972 crops and delayed 1973 plantings. Interest centered on weekly percentages of acreage harvested and planted for corn and soybeans in the Corn Belt.

Crop comments were supplied by SRS field offices, while rainfall, temperatures and other related weather information were supplied by the National Oceanic and Atmospheric Administration.

6. Cotton Contracting: Data to determine the extent of forward cotton contracting were collected by objective yield survey and the April cotton disposition survey. Estimates of the percent forward contracted were released in the September and May Crop Reports and prompted considerable interest throughout the cotton industry.
7. Special State Projects:
 - a. South Carolina: The South Carolina Statistical Office, in cooperation with Clemson University, published a report on origin of livestock moving into and out of the State. This program required data collection assistance from North Carolina and Georgia.

- b. Nevada: The January special "warm-up" Cattle on Feed Report is part of a continuing State project. This report shows the number and weights of cattle being prepared for feedlots.
- c. Wisconsin: The Wisconsin staff conducted a survey and reported in August 1972 the marketing channels for cattle fattened for slaughter, sources of feeder cattle and calves for slaughter, and the kind of cattle being finished. In June 1973, Wisconsin published an additional report on the number of calves born, purchased, and sold from farms.

The Wisconsin SSO, in cooperation with the state Department of Agriculture, published information on egg buyers and producer-graders to show trends and movements in egg marketings, sales by kinds of outlets, and packing methods.

- d. Illinois: A special survey in early 1973 dealt with the percent of feeder pigs purchased by weight classes, average age at time of purchase, and source of supply. The report was published in April 1973.
- e. Wyoming: Wyoming conducted a survey in early 1973 of the number of sheep and lamb deaths, by causes, during 1972. Estimates were issued in April 1973.
- f. Arkansas: Arkansas again collected data for the annual poultry bulletin in cooperation with the Arkansas Extension Service. This bulletin, to be published in 1974, will cover production of commercial eggs, broilers and turkeys with county data for numbers of layers and marketings of broilers and turkeys.
- g. California: In addition to the regular SRS program of chicken and egg estimates, California prepared special estimates of numbers of birds destroyed under the Exotic Newcastle Disease Eradication Program. These data were published in April 1973.

California will use data collected by the State Department of Food and Agriculture under its mandatory California Egg Program (marketing order) in developing monthly layer and egg production estimates rather than SRS data. Independent parallel monthly estimates in early 1973 from both data sources--SRS Surveys and Egg Program data--had comparable results. SRS will estimate production and layer numbers and supply these data to the State Egg Program office after Washington release dates. SRS will maintain a mailing list for releases, backup, and to collect December 1 inventory data.

This cooperation reduces respondent burden, eliminates duplication of effort, improves the SRS image with poultry producers, and, hopefully, will improve the quality of statistical data.

- 8. Weekly Egg-type Chick Report: Illinois, California, Washington and Georgia continued to issue a weekly report on egg-type chicks. It shows the individual State and the 4-State total of the weekly number of eggs set and chicks placed. Illinois also publishes the number of started pullets placed.
- 9. December Enumeration of Egg Producing Flocks: A December census of commercial egg producing flocks continued in Alabama, Virginia and Arkansas. The surveys were highly successful and provided reliable estimates of the egg laying flocks and other classes of chickens. Florida conducted an annual survey in December of large egg laying operations to establish the correct level of this segment of the industry.

10. Egg Production Estimates by Use: Virginia published separate monthly estimates of market eggs and hatching eggs. Alabama published egg production estimates by type of flocks and combined its monthly egg and hatchery production releases. Arkansas and Georgia also published monthly data by type of layer flock.

C. Activities to Review Commodity Programs

1. Program Modifications: Programs are constantly being reviewed for value and effectiveness. Before adopting proposed program modifications, comments are requested from the public, trade journals, industry, governments and other users of the data regarding reactions to the contemplated changes. During Fiscal Year 1973, several programs were evaluated and the following modifications became effective:
 - a. Fresh Market Vegetables: Quarterly estimates (winter, spring, summer and fall) were initiated for 17 fresh market crops in lieu of ten seasonal groups previously used. These estimates include prospective total acreage, acreage for harvest in the quarter by State, and projected production for the United States. Monthly forecasts in season by State have been discontinued in favor of a single United States projection except for strawberries and onions.
 - b. Processing Vegetables: Reports for seven processing vegetable crops were consolidated into one intentions to plant report and one preliminary acreage report. The number of production forecasts was reduced to one, about mid-way in the season, for each processing vegetable crop.
 - c. Potatoes: The number of seasonal groups for which potato estimates are made was reduced from six to four. The new seasonal groups are winter, spring, summer and fall.

An August 1 acreage planted estimate is made for 12 States which account for approximately 95 percent of fall crop acreage. The September 1 Fall Potato Production forecast was eliminated for all States. Estimates of potato stocks on April 1 were added to the previous schedule of stocks estimates made monthly from December 1 through March 1.

- d. Monthly Fertilizer Reports: A report of monthly fertilizer consumption data collected by State Control Officials in 15 States was begun in September 1972 and continued each month thereafter.
- e. Seed Crops Modifications: The addition of the Annual Seed Crop Summary in May permitted the timely publication of revisions after nearly complete seed cleaner check data became available.

Oregon, the major orchardgrass seed producing State, was added to the program beginning with the 1972 crop.
- f. Mint: Publication of peppermint and spearmint oil statistics was shifted from the Fresh Market Vegetable Report to the Monthly Crop Report.
- g. Fruit Estimates Rescheduling: Data collection and publication of primarily end-of-season estimates of production, utilization, and price were rescheduled, permitting a mid-January release instead of May.
- h. Popcorn: An evaluation of the popcorn program was carried out during 1973. All popcorn processors, a sample of growers and others in the popcorn trade were asked to appraise a number of changes in the program. As a result of this evaluation, planted acreage is now released in July and annual estimates of production by method of harvest are published in the Annual Crop Summary.

- i. Livestock, Dairy and Poultry: The implementation of program changes and modifications for livestock, dairy and poultry programs adopted in October 1971 was completed during the first part of Fiscal Year 1973.
- j. Fluid Milk and Cream Report: The monthly Fluid Milk and Cream Report was discontinued with the June 1973 release. Much of the data previously published in the Fluid Milk and Cream Report was available from other Federal sources.
- k. Manufactured Dairy Products: Beginning January 1973, publication of monthly estimates of Mozzarella cheese, lowfat cottage cheese, dry whey and condensed whey production were initiated. Heretofore, these monthly estimates were available to the public only in an annual publication. Monthly production estimates on a current basis for these items give recognition to the growing importance of production of Italian cheese and lowfat dairy products in the United States.
- l. Weekly Broiler Program: Connecticut was dropped from the Weekly Commercial Broiler program effective April 1, 1973. Broiler production in Connecticut had become relatively insignificant and in 1972 accounted for only one-tenth of a percent of the 22-State total. The remaining 21 States in the broiler program account for more than 96 percent of the total U.S. broiler production.
- m. Weekly Turkey Hatchery Program: To keep pace with changes in this industry, the following changes in the Weekly Turkey Poult Hatchery Program were made effective July 1, 1973, as follows:
 - (1) North Carolina, the fourth largest turkey poult producing State, was added to the weekly program.
 - (2) South Carolina and Oregon were dropped from the weekly program.
 - (3) Iowa and Texas were shifted from a December-June reporting period to the entire year.

The nine States now in the weekly program provide more complete coverage of the turkey poult industry on a year-round basis, and account for about 75 percent of the poults hatched in the United States.

2. Historical Revisions: Revised Acreage, Yield and Production Estimates of Field Crops, Statistical Bulletin 498, for the 1964-1969 period was published in November 1972. Revised Stocks of Grain, Oilseeds and Hay, Statistical Bulletin 513, was published in March of 1973. The review and publication of the 1965-70 revised livestock estimates were completed during the fiscal year.
3. Prices Paid Index Study: The contract was renewed with the University of Minnesota to study the effect of market changes for purchased inputs on the construction of the index of prices paid by farmers.

A final report for the building and fencing study was received in May and a preliminary report for the fertilizer and farm machinery was received in June. The final report is expected in Fiscal Year 1974.

D. Activities to Expedite Processing and Release of Reports

1. Communications: A national facsimile network serving the 48 conterminous States was operational by the end of the year. The system is being utilized heavily for transmission of releases and centrally summarized survey data, and is being used selectively on survey estimates and other data submitted from field offices. Transmissions among offices will become more active as standardization in programs and services increases.

2. Generalized Systems: SRS capitalized on the development of generalized programming techniques during the year. Flexibility was built into the development of generalized systems, thus eliminating the need for frequent and costly program alterations. Generalized systems which were developed and implemented throughout SRS include the Mail List System, Generalized Edit, Generalized Summary, and Prices Received System. The benefits of flexibility coupled with uniform standards of processing will continue to be realized. Generalized systems under development include the Universe File System, and Data Base and Management Report activities.
3. Network Data Processing: Considerable progress was made toward the goal of a decentralized nationwide network for the transmission and processing of survey and report data among State Statistical Offices and Washington, D.C. All State offices, excluding Alaska, have access to and are doing a major portion of their statistical work on computers. More significantly, 21 offices are processing via high speed terminals connected to off-site computers for remote job entry purposes. In addition to the terminal in Washington, D.C., 12 of the 21 have access to INFONET, a nationwide communications network supplying data transmission and time sharing capabilities to Federal users.

A substantial amount of programming time in writing and testing new programs has been saved by implementing and maintaining systems centrally and shared by all State offices.

Network processing and generalized systems complement each other and have greatly enhanced the processing capabilities of the Agency.

STATISTICAL RESEARCH AND SERVICE

Current Activities and Trends: Most funds used for research and service are directed toward improving the Agency's crop and livestock estimating techniques. Considerable emphasis is placed on bettering sample survey designs as well as testing new forecasting and estimating techniques. Other activities include the review, coordination and monitoring of data gathering surveys conducted by the Department. This involves (1) the review of all proposed statistical forms and survey plans requiring Office of Management and Budget clearance, and (2) coordination of all inter- and intra-department programs for the improvement of agricultural statistics and related data.

Program Goals: The principal goals of this program are to (1) coordinate and direct statistical clearance and services in the Department, (2) provide support research for operational programs, and (3) provide research to develop improved estimating techniques.

Selected Examples of Recent Progress

- A. Statistical Clearance and Consultation: The Statistical Clearance Office, serving as Departmental liaison with the Office of Management and Budget for Federal Reports Act clearance, handled 478 requests for clearance of forms, survey plans, and reporting requirements during fiscal year 1973. In this review, staff assistance on sample design and survey planning was provided to a number of Department agencies. Arrangements for several surveys were worked out, pursuant to OMB guidelines, to have SRS handle the data collection function for other agencies. Special activities of the staff included: (1) participation in preparation of a report for the Senate Committee on Agriculture and Forestry, describing a plan for annual sample surveys in lieu of a 1974 Census of Agriculture; (2) participation on a Department Land Inventory and Monitoring Advisory Group; (3) coordination of preparation of listings of personnel for inclusion in the 23rd edition of OMB's Federal Statistical Directory; (4) coordination of the preparation of updated materials for the Census Bureau's 1973 Statistical Abstract; and (5) organization of a series of SRS seminars on statistical survey methods for departmental researchers and data users.

B. Operational Programs Support Research

1. Research in Area Frame Sampling Methodology:

a. Improved Technology: Analysis of the data from the June Enumerative Survey is part of an effort to evaluate the worth of an interpenetrating sample design for future area frame samples. Research on methods to maximize the benefits of the design were also started. Preliminary research began on the feasibility of using multivariate analysis techniques in order to group non-contiguous counties. The purpose was to reduce sampling errors at the State level through more effective stratification in an interpenetrating sampling design.

2. Response Error Research: Data collected in several ways from farmers were compared with actual milk plant receipts. An important finding was that there were no significant differences between means from data collected by telephone and personal interview. However, the telephone enumeration did cause a bias that was significantly different from zero. The study also showed that the respondent was the main contributor to the response error. A report will be issued shortly.

A model to determine the variability of responses due to interviewers and respondents was developed. Interviewer effects were not significant. The variances of respondent errors were a significant proportion of the total variance of responses for certain acreage and livestock items in the survey. A report summarizing the results of the study was published by Iowa State University.

A sample of about 500 Iowa farmers was interviewed to determine why they refuse to respond when selected in a sample. Analysis of the survey is now underway. The goal is to develop procedures to improve the response rate for surveys.

3. Crop Yield and Quality Estimation and Forecasting:

a. Corn: Studies of the relationship between plant vegetative characteristics observed near August 1 and September 1 and final weight of mature grain per plant were continued in Fiscal Year 1973 in Iowa, Ohio and Maryland. Certain characteristics were highly correlated with final ear weight in specific years, but strength of the relationship was substantially lower over a 3-year period (1970-72). Models developed to forecast final weight per ear were compared to early season forecasts based upon average weight per ear in previous years.

b. Wheat: Analysis of field data collected in Kansas and Washington during Fiscal Years 1972 and 1973 indicated no significant differences for various plant population characteristics measured using three different plot sizes. Thus, it was determined that yield forecast models utilizing these characteristics would be valid for any of the plot sizes. This led to the adoption of a smaller plot size for collection of data during the 1973 crop season.

c. Pecans: Data collected in Mississippi during Fiscal Year 1973 were analyzed to (1) examine different methods of estimating the yield of pecan trees, (2) determine which methods might be useful in improving early season yield forecasts, and (3) develop a model to predict weight of mature nuts per tree. The data collected in July, August and September provided estimates of the number of nuts per tree based upon counts on accessible sample limbs and expansions of nut counts from color slides. The number of nuts dropped during August and September was also estimated. Results of a detailed analysis indicate expanded photo-counts are the most useful in forecasting yield per tree. Two models expressing surface

area as a function of the shape of the pecan trees were used in expanding photo-count data to the total surface area of a tree.

- d. Potato Stocks Quality: Methods and procedures for measuring changes in quality and weight of stored potatoes were investigated in the Red River Valley of North Dakota and Minnesota during Fiscal Year 1973. Measurements of quality of potatoes entering storage and after specific periods of storage were obtained. Additional work is needed to refine data collection procedures for estimating changes in weight of potatoes during storage and to determine the relationship of changes in quality and weight during storage to various parameters associated with storage facilities.
- e. Papayas: A research project designed to develop procedures for forecasting papaya production in Hawaii was initiated during Fiscal Year 1973. Data on the number of fruit set, fruit size and weight of fruit harvested are obtained weekly for sample trees on the Island of Hawaii. Counts of visible papayas from color photography and counts in the field showed a very strong relationship. This suggests that a combination of counts in the field and from photographs may provide an efficient means of estimating the number of papayas per tree.

C. Research Toward Improving Estimating Techniques

1. Remote Sensing: Since the launch of the Earth Resources Technology Satellite (ERTS) the agency has been investigating the potential use of ERTS type imagery as a method of collecting agricultural data. The objectives of the investigation are: (1) develop methods of identifying crop species from space imagery within the context of multistage and multiple frame sampling; (2) develop methods of estimating crop acreages from space imagery.

Study sites are located in Kansas, Missouri, South Dakota, and Idaho. Preliminary results from 29 small area segments in Missouri showed 60 percent correct crop classification using equal prior probabilities and data from 3 ERTS overpasses. Using weighted prior probabilities from the same passes, classification improved to 70 percent. Classification of single passes and with equal probabilities ranged from 40 percent to 50 percent correct classification.

2. Crop Identification: An exploratory study in California was done to determine the information relevant to crop discrimination present in a fine grid digital scan of ground reflectance from an aerial photograph. The data used in this study are time series realizations collected according to an experimental design. The data analysis approach employed was a synthesis of experimental design methods of time series analysis which are similar to row patterns in agricultural fields. The ability to classify crops correctly using spectral data and the normal multivariate discrimination approach ranged from 42 to 65 percent. When including the time series parameters from the data, the correct classification ranged from 62 to 84 percent. When both the spectral and the time series data were combined, classification accuracy improved substantially, ranging from 88 to 98 percent.
3. Automated Fruit Counting: Using ground photographs (35 mm) of fruit trees, a preliminary means of counting the number of fruit using a computer has been developed. The photograph was digitized using a microdensitometer. Software was developed to isolate the fruit from the rest of the tree background. The initial results using a non-parametric approach showed fruit counts were slightly greater than those made by photo interpreters. The use of the multivariate discrimination approach is now being investigated and preliminary results indicate mature oranges can be separated from other background material approaching 100 percent of the time. Similar results for green peaches were somewhat less accurate.

WORK PERFORMED FOR OTHERS

Selected Examples of Recent Progress

1. January Planting Intentions Report: At the request of ASCS, an early intentions survey was made in 35 states for major crops to be planted in 1973. The resulting Prospective Plantings Report was issued January 19, 1973.
2. Rice Estimates by Length of Grain Classes: A rice estimating program to obtain data by length of grain classes was initiated at the request of ASCS. These data were published in the November 1 Crop Report based on the probability survey conducted in October. A later follow-up survey was made to obtain final data from growers who had not yet completed their harvest at the time of the October survey. Final rice production and stocks estimates for the year were published by length of grain classes.
3. Barley Variety Survey: SRS was again requested to make a barley variety survey for the Malting Barley Improvement Association. The survey was conducted in the spring of 1973 and covered 1973 plantings in Minnesota, North Dakota, South Dakota, Montana, Idaho, Washington, Oregon and California.
4. Mushroom Study: The Agency cooperated with the Federal Tariff Commission to determine some of the competitive aspects of the U.S. industry and the effect of imported mushrooms.
5. County Data for FCIC and ASCS: County estimates of acreage, yield and production for the major field crops were again prepared for ASCS and FCIC. Estimates covered selected states and counties for ASCS and growing practices for FCIC where crop insurance programs were in effect.
6. Pacific Northwest Wheat Project: This regional activity produces a comprehensive quarterly accounting of supply and disappearance of white wheat and all wheat in the northwest wheat area. The primary purpose of the project is to provide current information on available supplies which are almost entirely exported.
7. Job Vacancies: Questions were added to the Quarterly Agricultural Labor Survey in order to provide the Bureau of Labor Statistics with information relative to the number of jobs immediately available and future job openings by type of worker for the United States. Data were not published by this agency but provided directly to BLS each quarter.
8. Cost of Producing Upland Cotton: A survey was conducted for the Economic Research Service to determine the cost of producing upland cotton. A probability sample of approximately 2,500 upland cotton producers was selected in 16 major cotton producing regions. The questionnaires contained the detail required for estimates of costs of all input items including power, equipment and irrigation. Enumeration was completed in early March and all questionnaires were delivered to ERS by May 1.
9. ASCS Voter Procedures Survey: In April 1973, a sample of 1,150 eligible voters for ASCS elections in Alabama and South Carolina was surveyed. Independent samples were selected in 14 pre-designated counties in the two States. The survey was conducted to obtain factual data on the opinions and attitudes of farmers regarding agricultural assistance programs, voting procedures and promotional campaigns in order for ASCS to encourage increased voting participation among both minority and non-minority groups. Editing and summarization will continue into 1974.
10. Foreign Activities: The Statistical Reporting Service was engaged in technical assistance and training programs directed toward the development of improved statistical services in developing countries. These are under the

sponsorship of AID primarily, but do include some other international organizations. A total of 110 participants from around the world received training from this agency during fiscal year 1973. The majority of these were trained in sample design, data collection and survey management, and data summarization procedures. Programs included formal classroom training, as well as practical on-the-job training in both Washington and our State Statistical Offices. Programs were conducted in both Spanish and English.

The staff of the Statistical Reporting Service also provided technical assistance to 12 countries during the fiscal year. A total of 27 staff members participated in these programs, three of them on permanent resident assignments and 24 serving (usually) on a team providing assistance to the country. These projects were generally designed to develop a reliable sample survey system to provide current agricultural data in the countries. Two in-country seminars were conducted by members of the staff while on technical assistance assignments.

11. Export Sales Reporting: The Export Sales Reporting Program of the Agency was initiated in fiscal year 1974 as directed by the Secretary of Agriculture and funded through a reimbursable agreement with the Agricultural Stabilization and Conservation Service. Data covering 28 commodities on export sales outstanding, exports made, and amendments or cancellations of existing export contracts made during the week were collected on a weekly basis, tabulated and prepared for release to the public. These releases contain totals of export sales outstanding by commodity by marketing year along with detail for specific countries or geographic areas.

The first report issued by SRS, released on November 2, 1973, covered the weeks ending October 7 and 14, 1973. Weekly reports have been issued to the public since the initial report and reactions have been generally favorable. SRS is continuing its efforts to become better acquainted with exporters and their sales and record keeping practices by visiting and working closely with exporters.

The responsibility for export sales reporting is expected to shift from ASCS to SRS in fiscal year 1975.

For fiscal year 1974 the Statistical Reporting Service estimates obligations and man-year in the following geographic locations:

	<u>Obligations a/</u>	<u>Full-time Man-years b/</u>
Alabama.....	\$322,200	14
Alaska.....	52,200	2
Arizona.....	224,700	11
Arkansas.....	369,900	14
California.....	1,103,300	41
Colorado.....	486,100	22
District of Columbia.....	7,470,600	331
Florida.....	599,900	19
Georgia.....	441,300	16
Hawaii.....	142,600	8
Idaho.....	408,500	16
Illinois.....	579,600	17
Indiana.....	461,100	18
Iowa.....	738,600	24
Kansas.....	675,200	20
Kentucky.....	427,600	16
Louisiana.....	332,300	13
Maryland.....	288,800	14

	<u>Obligations</u> a/	<u>Full-time</u> <u>Man-years</u> b/
Massachusetts.....	355,100	20
Michigan.....	417,200	19
Minnesota.....	570,000	22
Mississippi.....	482,400	16
Missouri.....	488,800	18
Montana.....	336,700	12
Nebraska.....	681,000	25
Nevada.....	118,000	5
New Jersey.....	187,500	11
New Mexico.....	240,800	11
New York.....	370,200	16
North Carolina.....	552,100	20
North Dakota.....	376,200	13
Ohio.....	595,800	19
Oklahoma.....	393,700	15
Oregon.....	374,000	18
Pennsylvania.....	403,800	19
South Carolina.....	287,600	14
South Dakota.....	507,200	17
Tennessee.....	405,500	14
Texas.....	806,600	32
Utah.....	218,900	11
Virginia.....	352,900	17
Washington.....	397,700	19
West Virginia.....	156,900	9
Wisconsin.....	564,600	24
Wyoming.....	<u>224,500</u>	<u>10</u>
TOTAL.....	<u>25,990,200</u>	<u>1,062</u>

a/ Includes appropriated, reimbursements, and trust funds.

b/ Man-years for other than full-time permanent are 361 which cannot be distributed by geographic location.

CROP REPORTING BOARD

1974 Releases



Full-time lockup
8:30 a.m. - 3:30 p.m.
Room 0201 - 0240

Shift area lockup
12:30 p.m. - 2:00 p.m.
Room 0201 - 0210

Release hour: 3 p.m. for all reports except
Cattle Production 11:00 p.m.

DATE	JANUARY	FEBRUARY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER	DATE
1	Holiday	Cattle Slaughter	Cattle Slaughter		Poultry Slaughter	Sunday	Dairy Products	Poultry Slaughter	Sunday	Cattle Slaughter	Poultry Slaughter	Sunday	1
2		Saturday	Saturday					Fruit Seed Stocks	Holiday		Saturday		2
3		Sunday	Sunday	Egg Products	Cattle Slaughter	Poultry Slaughter	Poultry Slaughter	Saturday	Poultry Slaughter	Poultry Slaughter	Sunday		3
4	Poultry Slaughter			Poultry Slaughter	Cattle		Holiday	Sunday	Cattle	Cattle			4
5	Saturday	Cattle	Cattle				Cattle	Cattle Slaughter	Saturday	Cattle	Poultry Slaughter		5
6	Sunday	Egg Products	Egg Products	Saturday	Cattle		Saturday			Sunday			6
7			Poultry Slaughter		Com. Feeds	Com. Feeds			Saturday	Cherry		Saturday	7
8	Vegetables	Crop Product	Crop Product	Vegetables	Crop Product	Vegetables	Vegetables	Vegetables	Sunday	Vegetables	Crop Product		8
9	Crop Product	Saturday	Saturday		Milk Production		Vegetables	Farm Labor	Vegetables				9
10	Milk Production	Sunday	Sunday	Crop Product	Field Crops	Crop Product		Saturday	Farm Labor	Crop Product	Sunday	Crop Product	10
11			Milk Production	Milk Production	Milk Production	Crop Product	Crop Product	Crop Product	Milk Production	Milk Production	Milk Production	Milk Production	11
12	Saturday			Milk Production				Crop Product	Milk Production	Sunday	Egg Products		12
13	Sunday	Cattle on Feed	Cattle on Feed	Saturday	Cattle on Feed	Saturday	Cattle on Feed	Saturday	Cattle on Feed	Sunday	Cattle on Feed	Cattle on Feed	13
14	Farm Labor	Prospective	Prospective	Sunday			Sunday	Cattle on Feed	Saturday	Holiday		Saturday	14
15	Money Annual							Fall Focus	Sunday		Vegetables		15
16	Crop Product	Saturday	Saturday				Sunday	Egg Products			Saturday		16
17	Cold Storage	Sunday	Sunday	Cold Storage	Cold Storage	Cold Storage	Cold Storage	Saturday	Hop Stocks	Cattle Slaughter	Sunday		17
18	Cattle on Feed	Holiday	Cold Storage	Cattle on Feed	Saturday	Cold Storage	Cattle on Feed	Sunday	Cold Storage	Cattle on Feed	Cattle on Feed	Cattle on Feed	18
19	Saturday	Cold Storage	Egg Products	Cold Storage	Sunday		Naval Stores	Cold Storage	Saturday	Saturday	Egg Products	Vegetables	19
20	Sunday	Egg Products	Naval Stores	Saturday		Dairy Products		Naval Stores	Sunday	Sunday	Naval Stores	Naval Stores	20
21	Naval Stores			Sunday	Naval Stores	Naval Stores	Naval Stores	Naval Stores	Saturday	Naval Stores		Saturday	21
22	Prospective		Hops and Pigs	Milk Production		Saturday		Timothy Seed	Sunday	Alfalfa Seed		Sunday	22
23		Saturday	Saturday			Sunday		Naval Stores	Saturday		Saturday		23
24	Cattle Slaughter	Sunday	Sunday	Naval Stores	Egg Products	Naval Stores	Naval Stores	Saturday	Naval Stores	Cattle Slaughter	Sunday		24
25	Naval Stores	Naval Stores	Naval Stores	Naval Stores	Naval Stores	Naval Stores	Naval Stores	Naval Stores	Naval Stores	Naval Stores	Naval Stores	Naval Stores	25
26	Sunday	Naval Stores	Naval Stores	Sunday				Naval Stores	Saturday	Naval Stores	Saturday		26
27	Saturday	Naval Stores	Naval Stores	Saturday				Naval Stores	Sunday	Naval Stores	Sunday		27
28	Naval Stores	Naval Stores	Naval Stores	Sunday				Naval Stores	Saturday	Naval Stores	Saturday		28
29	Naval Stores	Naval Stores	Naval Stores	Sunday				Naval Stores	Saturday	Naval Stores	Saturday		29
30	Naval Stores	Naval Stores	Naval Stores	Sunday				Naval Stores	Saturday	Naval Stores	Saturday		30
31	Naval Stores	Naval Stores	Naval Stores	Sunday				Naval Stores	Saturday	Naval Stores	Saturday		31

Statistical Reporting Service
U. S. Department of Agriculture
Washington, D. C.

PASSENGER MOTOR VEHICLES

The 1975 Budget Estimates propose the replacement of three passenger motor vehicles. All passenger motor vehicles of the agency are located in the field at the various state offices. These vehicles, as well as those obtained for use throughout the year from the General Services Administration, are used by professional statisticians, supervisory enumerators, and other field employees in conducting enumerative surveys and related work pertinent to the preparation of the crop and livestock estimates. The use of common carriers in this type of work is not satisfactory in that it is frequently necessary to visit during a short period of time numerous farms and various establishments within a specified geographic area.

The three sedans proposed for replacement during 1975 are necessary to meet the transportation requirements inherent in carrying out the agency's program. The vehicles proposed to be replaced will have passed the minimum replacement standards of 6 years of age or 60,000 miles prescribed by the General Services Administration.

Age and mileage data for passenger motor vehicles on hand or on order as of June 30, 1973 are indicated below:

Age Data			Mileage Data		
Age-Year Model	Number of Vehicles	Percent of Total	Lifetime Mileage (thousands)	Number of Vehicles	Percent of Total
1965	2	13	80-100	3	20
1966	2	13	60-80	2	13
1970	4	27	40-60	3	20
1971	3	20	20-40	2	13
1972	3	20	Under-20	5	34
1973	<u>1</u>	<u>7</u>		<u>15</u>	<u>100</u>
Total	<u>15</u>	<u>100</u>			

ECONOMIC RESEARCH SERVICE

Purpose Statement

The Economic Research Service was established by Secretary's Memorandum No. 1446, Supplement No. 1, of April 3, 1961, under Reorganization Plan No. 2 of 1953 and other authorities.

The mission of the Economic Research Service is to develop and disseminate economic information for use by public and private decisionmakers concerned with the allocation and use of resources in agriculture and rural America. In carrying out this work the Service:

- Maintains estimates of current resource use, output, and distribution of food and fiber.
- Identifies the interrelationships of economic forces affecting resource use, production and distribution of food and fiber.
- Maintains short-term forecasts and long-range projections of resource use, production and distribution of food and fiber for both probable and possible future events.
- Evaluates the performance of the food and fiber sector in meeting the needs and wants of consumers and overall societal goals concerning such matters as resource ownership and use, income and income distribution, and quality of life.
- Identifies probable and possible structural adjustments in the food and fiber sector and rural America and evaluate their impact on consumers, and overall societal goals.
- Maintains current information on the principal social and economic factors affecting life in nonmetropolitan areas and identify and evaluates alternative public and private actions which impact on these areas.
- Provides direct assistance and coordinates the USDA's overall program to aid agricultural development in lower income countries.
- Disseminates economic information on a timely basis and in a form that is understandable to the people likely to find the information of value.

The Service functions through a central office in Washington, D. C. and a small staff in each of 37 States, principally at the Land Grant Colleges and Universities. Much of the research is carried on in cooperation with State Agricultural Experiment Stations.

Available Funds and Man-Years
1973 and Estimated, 1974 and 1975

Item	Actual		Estimated		Budget Estimate	
	1973		Available, 1974		1975	
	Amount	Man-Years	Amount	Man-Years	Amount	Man-Years
Economic Research Service:						
Appropriation.....	\$18,624,859	835	\$19,638,100	809	\$21,831,000	831
Obligations under other USDA:						
appropriations:						
Soil Conservation Service:						
Watershed planning.....	28,000	2	30,900	2	33,000	2
Watershed and flood						
prevention operations....	166,034	9	156,600	8	157,400	8
Resource conservation and						
development.....	196,191	10	146,200	7	92,200	4
River basin surveys and						
investigations.....	2,032,246	90	2,204,812	94	2,353,000	94
Agricultural Stabilization						
and Conservation Service:						
For acreage studies.....	221,300	6	- -	- -	- -	- -
Agricultural Marketing						
Service:						
Study of surplus removal						
program.....	25,000	1	25,000	1	25,000	1
Extension Service:						
Low income food study...	90,575	4	46,000	2	46,000	2
Farmers Home Adminis-						
tration:						
Non-metropolitan devel-						
opment district planning						
programs study.....	25,000	2	25,000	2	- -	- -
For economic evaluation						
of the USDA water,						
sewer and waste disposal						
program in rural com-						
munities.....	132,621	5	- -	- -	- -	- -
Food and nutrition Service:						
To evaluate effectiveness						
of food programs.....	99,118	4	76,000	3	76,000	3
Animal and Plant Health						
Inspection Service:						
Economic study of cattle						
disease.....	27,444	- -	- -	- -	- -	- -
Rural Development Service:						
Non-metropolitan devel-						
opment district plan-						
ning programs study....	- -	- -	- -	- -	25,000	1
Miscellaneous USDA reim-						
bursements.....	88,454	4	77,595	3	258,000	11
Total, other USDA appro-						
priations.....	3,132,983	137	2,788,107	122	3,065,600	126
Total, Agricultural Appro-						
priation Bill.....	21,757,842	972	22,426,207	931	24,896,600	957

Item	Actual		Estimated		Budget Estimate	
	1973		Available, 1974		1975	
	Amount	Man- Years	Amount	Man- Years	Amount	Man- Years
Other funds:						
Other Federal funds.....	\$9,493,225	126	\$7,245,365	139	\$6,955,000	135
Non-Federal funds.....	129,879	8	832,040	8	915,000	7
Total, other funds.....	9,623,104	134	8,077,405	147	7,870,000	142
Total, Economic Research						
Service.....	31,380,946	1,106	30,503,612	1,078	32,766,600	1,099

End-of-year Employment:	1973	1974	1975
	<u>Actual</u>	<u>Estimated</u>	<u>Estimated</u>
Permanent full-time.....	1,059	1,022	1,041
Other.....	63	65	65
Total.....	<u>1,122</u>	<u>1,087</u>	<u>1,106</u>

ECONOMIC RESEARCH SERVICE

Appropriation Act, 1974	\$15 780,000
Budget Estimate, 1975	<u>21,831,000</u>
Increase in Appropriation.....	+6,051,000

Adjustment in 1974:

Appropriation Act, 1974	\$15,780,000	
Transfer from OMS for information activities <u>a</u> /.....	+324,100	
Transfer from SRS for marketing research activities <u>b</u> /	+215,000	
Transfer from COMM for information activities <u>c</u> / ...	+9,000	
Transfer from RDS for rural development activities <u>d</u> /	+2,003,000	
1974 Supplemental Appropriation for pay costs	<u>+1,307,000</u>	
Adjusted base for 1975		19,638,100
Budget estimate, 1975		<u>21,831,000</u>
Increase over adjusted 1974		+2,192,900

a/ On June 22, 1973, the information services, which had been performed on a centralized basis by the Office of Management Services for a number of smaller USDA agencies, were transferred from OMS to the Agencies involved. This transfer provided ERS with an additional 20 full-time employees.

b/ On April 28, 1973, the market research functions were transferred to ERS from the Statistical Reporting Service. This transfer of 8 full-time personnel was to conform with OMB guidelines which called for a clear separation of research and data collection functions.

c/ On December 23, 1973, one stockhandler position was transferred to ERS from the Office of Communications. The transfer will enable all ERS bulk storage publications to be handled by ERS personnel.

d/ On December 4, 1973, the Economic Development Division was transferred to ERS from the Rural Development Service. This transfer of 94 full-time and 4 other personnel returned rural development research functions to ERS.

SUMMARY OF INCREASES AND DECREASE
(On basis of adjusted appropriation)

	<u>1974</u>	<u>Increases or Decrease</u>	<u>1975 Estimate</u>
Improvement of supply, demand and price forecasting procedures for major commodities	\$1,900,000	+\$513,000	\$2,413,000
Costs of producing wheat, feed grains, cotton and milk.	--	+894,000	894,000
Space charges pursuant to P.L. 92-313.....	--	+792,000	792,000
Rural transportation study ...	275,000	+100,000	375,000
Annualization of pay cost increase effective in FY 1974.	1,307,000	+168,500	1,475,900
Benefits/cost analysis of predator controls.....	275,000	-275,000	--
All other	<u>15,881,100</u>	<u>--</u>	<u>15,881,100</u>
Total available.....	<u>19,638,100</u>	<u>+2,192,900</u>	<u>21,831,000</u>

PROJECT STATEMENT
(On basis of adjusted appropriation)

Project	1973	1974 :(estimated):	Increases	1975 :(estimated)
1. Economic Analysis:				
and Research.....	\$18,231,850	\$19,638,100	+\$2,192,900 (1)	\$21,831,000
Unobligated balance..	+393,009	- -	- -	- -
Total available or estimate	<u>18,624,859</u>	<u>19,638,100</u>	<u>+2,192,900</u>	<u>21,831,000</u>
Transfer to GSA	+2,741	--		
Transfer from OMS....	-324,100	-324,100		
Transfer from SRS ...	-215,000	-215,000		
Transfer from COMM...	-8,500	-9,000		
Transfer from RDS....	--	-2,003,000		
Proposed supplemental:				
for pay increase				
costs.....	--	-1,307,000		
Total appropriation	<u>18,080,000</u>	<u>15,780,000</u>		

EXPLANATION OF PROGRAM

The Economic Research Service develops and carries out a program of economic research designed to provide economic intelligence for the USDA and other Federal decisionmakers, farmers and related industries and the general public. The findings of this research are made available to these users through research reports and through economic outlook and situation reports on major commodities, the national economy, and the international economy.

The program of the Economic Research Service is divided into two broad areas: (1) Food and Fiber Economics, and (2) Resource and Development Economics. The first area focuses on the entire agriculture industry from farmer to consumer. It contains three divisions: (1) Commodity Economics Division, (2) National Economic Analysis Division, and (3) Foreign Demand and Competition Division.

The Commodity Economics Division carries out a national program of economic research and analysis, statistical programs, and other work relating to the production and marketing of farm commodities. It includes evaluations of the organization and performance of major commodity subsectors; costs and returns to farmers and marketers; situation and outlook; commodity projections; price spreads; and analysis of U.S. farm commodity programs.

The National Economic Analysis Division deals with the entire agriculture sector and centers around the more aggregative issues cutting across commodity lines. This includes consumer demand analysis; agricultural finance; farm inputs; pricing, policy, and program analysis; structure and adjustments in the agriculture sector; long-run projections; and overall performance measures in agriculture such as farm income, the marketing bill, and others.

The Foreign Demand and Competition Division focuses on worldwide supply and demand conditions; the impact of U.S. and foreign policies on world farm trade; and publishes information that traders, government officials, and trade negotiators need to tap world markets.

The second area, Resource and Development Economics, includes the work of three divisions: (1) Natural Resource Economics Division, (2) Economic Development Division, and (3) Foreign Development Division.

The Natural Resource Economics Division centers its research on the use, conservation, development, and control of natural resources and their contribution to local, regional, and national economic growth. Analysis of environmental issues is an important element of this Division's responsibility.

The Economic Development Division maintains current information on the principal social and economic factors affecting life in nonmetropolitan areas and identifies and evaluates alternative public and private actions which impact on these areas.

The Foreign Development Division provides direct assistance and coordinates the USDA's overall program to aid agricultural development in lower income countries. The Agency for International Development provides most of the funds for the operation of this division.

JUSTIFICATION OF INCREASES AND DECREASE

(1) An increase of \$2,192,900 for economic analysis and research consisting of:

- (a) GSA space rental costs+\$792,000
- (b) Annualization of pay cost increases effective in
fiscal year 1974 +168,900
- (c) Improvement of supply, demand and price forecasting
procedures for major commodities (\$1,900,000 available
in 1974) +513,000

Need for Increase: The Economic Research Service has a major responsibility for developing economic forecasts of demand and prices for commodities produced by American farmers. These forecasts play a major role in both private and public sector decisions.

Considerable criticism has been focused on the accuracy and reliability of certain recent ERS short-term forecasts, particularly those for domestic farm and retail prices of livestock, poultry, dairy, grains, oilseeds, and food in general.

ERS and others familiar with outlook and forecasting activities of the Department recognize the existence of forecast errors and the probable sources of error. In 1972 ERS established a committee composed of prominent representatives of government, industry, and universities to review its entire food and fiber economic research program. The committee noted certain deficiencies in the outlook, situation, and forecasting function of ERS and strongly recommended that the Agency take steps to alleviate these deficiencies.

But the problem has become particularly acute and visible at a time when the already increasing resources that ERS has allocated to this important function have been overtaxed to meet the needs for economic information of those charged with stabilizing food and agricultural prices. The need for such information to sustain economic stabilization programs and serve the increasingly strong market orientation of U.S. agriculture is likely to continue to overtax available ERS research.

A primary purpose of the recent reorganization of ERS was to increase the resource commitment to short-term forecasts of supply, demand and price. Despite these adjustments, resources remain insufficient to systematically isolate sources of error and develop alternative forecasting concepts and procedures to improve forecast accuracy and timeliness. The development of procedures for systematic evaluation of all forecasts and forecasting procedures is a key ingredient to improved forecasts. The additional resources would be directed toward these ends.

Plan of Work

Specific activities included in the plan of work are to:

1. Analyze and evaluate currently used short-term forecasting methods and procedures and past forecasts to determine the amount and specific sources of error. This is expected to reveal strengths and weaknesses of existing forecasting procedures, documentation practices, data and their use, and forecasting models.
2. Develop alternative forecasting concepts and procedures based on existing methods and techniques and test for improved performance over existing procedures.
3. Determine which new methods and techniques might be used. Continue development and evaluation of the relative accuracy of those which appear feasible.
4. Implement and evaluate on a continuing basis those procedures which are most promising in terms of accuracy, timeliness, simplicity, and economic rationale.

5. Develop an improved framework for procuring and compiling information on commodity supply and demand conditions in the U.S. and foreign countries and use this information to forecast supply, demand, price and exports and imports of crop and livestock commodities.
6. Adapt the latest automated technology for handling data and increasing the timeliness and availability of forecasts.

The analysis and research to achieve the stated objectives and to carry out the above activities will be performed in Washington, D. C., as a joint effort of the Commodity Economics, National Economic Analysis, and Foreign Demand and Competition Divisions of ERS. Approximately 7 SMY's will be assigned to implement steps 1 through 4, 4 SMY's for step 5, and 2 SMY's for step 6. The remaining funds will be used to acquire supply, demand and price data in the U.S. and abroad.

- (d) Costs of producing wheat, feed grains,
cotton and milk..... +\$894,000

Need for Increases: The Agriculture and Consumer Protection Act of 1973 directed that the Secretary of Agriculture conduct an annual cost of production study of the wheat, feed grain, cotton, and dairy commodities, in cooperation with the land grant colleges, commodity organizations, general farm organizations, and individual farmers. These studies, taking into consideration the various production practices, and a return to fixed costs and management, are to yield an annual national weighted average cost of production for each of these commodities based upon a unit that required one man to farm on a full-time basis. The Economic Research Service has been directed by the Secretary to take the leadership role in providing these cost estimates. Since the Service is currently developing annual estimates of the cost of producing cotton, the budget request relates only to wheat, feed grain and dairy commodities.

Plan of Work: A national base year sample survey for each commodity beginning with the 1973-74 production year and repeated every 5 years would be conducted. To make the estimates of cost representative of all producers, the sample would include farms with differing production practices, farm characteristics, and regional location. The total number of farms surveyed would be 6,000, consisting of a sample of 1,000 each of dairy, wheat, corn, barley, oats, and sorghum farms. Based on research experience gained in developing cost of production estimate for cotton, these sample sizes should be sufficient to provide accurate estimates of average costs of production for the above commodities. It is estimated that the error using this sample size would be 6 percent for the national weighted average cost and 20 percent for regional averages.

Because of the need to allocate certain fixed and overhead costs as prescribed by the legislation, information on commodities which compete or are produced on the same farms as those commodities under study will be obtained. Based on the data gathered from the survey a full-time, one-man farm operation concept for each commodity and appropriate cost estimates would be developed.

An annual survey designed to measure changes in production costs as a basis for annual updating of the base year cost estimates would be required. The annual updating surveys are expected to provide better estimates of changes in production costs than simple adjustments based on secondary data, since changes in both production techniques and costs of inputs would be obtained. Procedures and questionnaires used in the annual updates would be similar to those used in the base year, but fewer farms would be included in the sample. This research would be conducted in cooperation with others, as directed by the Act and necessitated by the nature of the study. The Statistical Reporting Service will do the actual survey work under agreement with the ERS. Land grant colleges, commodity organizations, and farm organizations would be consulted in the planning of the study, in the development of the survey schedule, and in the development of procedures to assure validity of the cost estimates.

As part of the Department's ongoing overall program to reduce the cost of producing cotton, the Economic Research Service has sufficient resources to develop an annual cost of production estimate for cotton as defined in the 1973 Farm Act. At a cost of \$100 per questionnaire, the 6,000 wheat, feed grain and dairy farms surveyed would cost an estimated \$600,000. Additional personnel required to administer these base year surveys, analyze the data and provide annual updates are six full-time scientists plus six support personnel. Thus, the estimated increase in full-time permanent positions is 12, at a total cost of \$185,000.

The total annual costs are summarized below:

Fiscal Year 1975:

Survey costs (6,000 schedules)	\$600,000
Personnel.....	194,000
ADP.....	100,000
Total.....	<u>894,000</u>

During the last half of fiscal year 1974 approximately \$60,000 in personnel and related costs will be expended to prepare for the base year survey. These costs will be funded with available FY 1974 resources.

(e) Rural transportation study (\$275,000 available in 1974).....	+\$100,000
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Need for Increase: Agricultural producers and industries are increasingly concerned about the problems of obtaining adequate and reasonably priced transportation services for moving farm products and supplies. Inadequate transportation services currently are a major constraint on our production and marketing capability. Recent increases in farm production and exports have severely strained the transportation system serving agriculture. Grain elevators in some areas quit buying farmers' crops when they could not get adequate transportation services. Tight supply conditions for fuel and fertilizer were aggravated by inadequate transportation services. Railroads serving rural areas are being considered for abandonment with potentially serious consequences for agriculture in these areas.

The Secretary of Agriculture, by law, is directed to assist in improving transportation services and facilities and in obtaining equitable and reasonable rates and services and adequate transportation facilities for agriculture. The transportation sector of the nation is largely general purpose in character, with agriculturally related traffic accounting for less than a fifth of all freight traffic. The overshadowing role of nonagricultural traffic in decisions about the structure and performance of transportation companies results in inadequate consideration, in many instances, of the unique requirements of the bulky, low valued, perishable goods shipped to and from rural areas.

The Economic Research Service has a program of research in the economics of transportation for informing shippers, transportation firms and the public and for supporting the Secretary's legislated responsibilities. Research has included studies of factors affecting the demand for transportation services in the food and fiber sector, impacts of changes in the amount and nature of transportation services on comparative advantages and farm incomes, and the ability of the system to meet varying demands for movements of farm inputs and farm products. The level of support for this program is smaller than needed for the magnitude of the problems revealed over the past few years and must be increased.

In fiscal year 1974 the Economic Research Service has shifted four scientific man-years from currently available resources into this high priority area of

work. However, the significance of the many problems in providing adequate and reasonably priced transportation services to agriculture will require even more resources to help policymakers reach timely and significant solutions to these problems.

Plan of Work:

Specific activities included in the plan of work are to:

1. Examine methods used to evaluate current supply and demand for various components of agriculture production, particularly for commodities and fertilizers.
2. Develop systematic approaches to evaluation of current supply and demand for transportation services to increase timeliness, accuracy and quantity of information that can be generated.
3. Analyze and project future transportation demands in agriculture.
4. Evaluate the impacts of existing and proposed investment and regulatory policies such as abandonment of rail lines, construction of deepwater ports, relaxing of regulations on rates and services, planned construction of highways and farm-to-market roads, changes in safety and environmental regulations, and the use of unit trains and shipper-owned equipment on the cost and volume of transportation services to be available for agriculture in the future.

(f) Benefit/cost analysis of predator
controls (\$275,000 available in 1974)..... -\$275,000

A program reduction of \$275,000 is proposed for FY 1975. The study will be completed with funds available in FY 1974.

ECONOMIC RESEARCH SERVICE

STATUS OF PROGRAM

The missions of the Economic Research Service are to develop and disseminate economic information related to agriculture and rural America that is needed by public and private individuals in making prudent decisions, and to coordinate and give leadership to the USDA training and technical assistance programs to lower income countries. The search for information to satisfy the first mission leads down many avenues. Research includes providing information to help improve farm income, enhance agricultural production and marketing efficiencies, expand farm exports, improve human nutrition, and assist in the economic and natural resource development of rural areas, with consideration for environmental quality. Foreign economic development assistance includes training of foreign nationals, providing technical assistance by USDA experts including researching economic problems of the lower income countries.

Research Reorganized

A reorganization of the agency became effective on July 1, 1973. Greater flexibility will now be possible in addressing new problems and issues. This should result in economic information that is more timely, accurate, and relevant to problems confronting decisionmakers.

Domestic food and fiber research was reorganized into two divisions which are better able to address the complex issues of modern agriculture than under the former three-division setup. The Commodity Economics Division will focus on analyses of individual farm commodities and on studies of major crop and livestock subsectors. The National Economic Analysis Division will examine such areas as adjustments and performance of the food and fiber system impacting on farm income, marketing costs and services to consumers.

Organizational barriers between and within divisions have been considerably lowered to encourage team research and permit more effective research management. Using management-by-objectives concepts, agencywide research goals are being established. As part of reorganization, ERS plans to strengthen its research program and working relationships with universities and agricultural experiment stations.

Demand for Economic Information Soars

The events of 1973 greatly increased the demand for economic intelligence, especially short-term outlook and analysis. Within a 12-month span, farming was hit by Hurricane Agnes in the Eastern United States, by a harsh winter and muddy spring in the Midwest, and by flooding Mississippi River in the Delta; all this as poor weather elsewhere in the world lowered crop output in 1972/73. Weather's impact was reflected in substantial grain purchases by the USSR and a rice shortage in Asia. The effects were compounded by devaluation of the dollar in world money markets. Rising commodity prices and reduced domestic supplies of fruits, vegetables, and livestock products culminated in runups in retail food prices.

This complex of problems gave rise to a series of equally dramatic reactions and adjustments. Farm programs were redirected from restraining production to encouraging it. Farmers responded by planting 28 million more acres for 1973 harvest than they had a year before. The government sold its grain stocks of 400 million bushels. Livestock producers cut production as feed prices escalated and supplies grew tight. Retail meat prices rose; consumers boycotted meat in April and retail and wholesale meat price ceilings were imposed for a few months. Exports moved out as quickly as jammed transportation pipelines allowed. Export limitations were imposed on soybeans, cottonseed and certain related products in the summer when acute shortages seemed imminent.

Some of the impacts of these events on ERS activities and research are noted in the following pages.

RECENT EXAMPLES OF ACTIVITIES AND PROGRESS

Research to Improve Farm Income

This area of research provides short-term forecasts of the supply, demand and financial factors affecting farm income. It evaluates farm programs and policy alternatives, and analyzes the changing business structure of farming.

Assessing the impact of recent events was a major challenge to short-term analysis. In addition to issuing the regular series of outlook and periodical reports and answering a heavy flow of inquiries from the public and other agencies, ERS made many special studies of the fast-developing situation. Requests came from other USDA agencies, the Cost of Living Council, Council of Economic Advisers, Price Commission, other government agencies, and Congress. Deadlines for these analyses, often involving several policy alternatives, frequently were a matter of hours or days. Media and consumer interests also made heavy use of ERS information in their efforts to cover and understand the year's events.

In addition to the demand for more evaluation of the current situation and outlook, the abnormal press of events made forecasting more difficult. The coefficients and other economic relationships that had proved generally reliable in more normal years proved less than adequate as a basis for forecasting prices and income given the unusual combination of events that occurred. Therefore, additional resources for improving these estimates are being requested for FY 1975.

Farm Program Alternatives Assessed: Expiration of the Agricultural Act of 1970 opened debate on the best course for future farm policy. ERS projected the probable impact on agricultural production, farm income, retail food prices and government costs through 1977 of four possibilities--return to basic legislation, deficiency payments, general cropland retirement, and several modifications of the 1970 law. The results provided essential information for Congress and the Administration in formulating the Agriculture and Consumer Protection Act of 1973.

More Beef Coming: Even though per capita beef supplies slipped by 6 pounds in 1973, raising concern at times about a meat scarcity, an ERS study utilizing the opinions of beef industry experts projected increasing beef production through 1980. Given prices high enough to stimulate expansion, beef cow numbers would increase nearly 10 million during the 1970's and imports would rise, boosting per capita beef supplies to 127 pounds in 1980 compared to 114 in 1970. Major herd expansion is expected in the Southeast, Northern Plains, and Corn Belt.

Early Warning on Fertilizer: The current shortage of fertilizer was anticipated by analysis that predicted the strong demand for nitrogen materials and the shortage of natural gas for producing them. Although demand for high analysis phosphates has caught up with the supply recently, plant capacity enlargements by 1975 should alleviate a tight situation.

Tobacco Study Continues: Tobacco is the most important of the remaining labor-intensive crops. In cooperation with the Department of Labor, ERS is studying the probable impact of mechanical harvesting and changing demands for tobacco on the industry and its workers. Determination of the likely extent of mechanization was completed in November 1973, while work on the impacts on labor and government programs and the effects on local economies and institutions will be completed in 1974.

Farming's Top 400: Farming was the primary activity of one-third of 411 firms directly involved in agricultural production and having farm sales of \$1 million or more. Primary sales of the other two-thirds were about evenly divided among supplying farm inputs, processing farm products, distributing them, and producing nonagricultural goods. Beef cattle, vegetables, fruits, and poultry were the

leading farm money earners among the 411 firms. The role of these big businesses and implications of their farming operations are under further study.

Tax Policies Evaluated: Several Federal tax policies could have a major impact on farm businesses. With the continuing escalation in average farm values, the graduated Federal death tax presents problems in keeping the family farm intact. It can total a tenth of the worth of a large farm estate, and few estates have enough liquid capital to pay the tax without cashing in property. Continuing research will evaluate alternatives (such as the under-used gift transfer rules) and suggest reforms.

Upcoming Research

A study of the long-run consequences of a free market for major farm commodities is underway. The analyses will include, based in part on experience in 1974, a projection of agricultural production and prices under free market conditions for several years in the future. In addition, estimates of farm income, food prices, efficiency of resource use and structure and control of agriculture will be made. The results of these analyses should be available late in fiscal year 1975.

Supported in part with additional funds made available by the Congress in 1974, work is underway to develop estimates of the value of capital inputs produced on the farm. This includes livestock breeding herds, orchards and land improvements. Present farm income and capital accounting practices do not include the separate identification of this kind of capital, and hence do not recognize capital formation as an additional value of output from farms.

The nature of control through contracting in the food and fiber sector and its likely future direction is being examined. This will include development of benchmark data on the extent of various types of contracting in the farming sector, identification of the incentives of various parties to engage in contracts, and projection of the nature and extent of these incentives in the future.

Agricultural Production and Marketing Efficiency Research

1. Improving Farming Efficiency: This research monitors efficiency in terms of farm output per unit of input and net returns, nationally for major commodities, regionally for typical farm operations, and comparatively for different sizes of farms and production practices.

Although farming efficiency has improved in most years, recent soaring input costs and disruptions in the marketplace have challenged this trend. For example, high 1973 feed prices brought a temporary halt to the long-term rise in milk produced per cow.

Big Wheat Farms Slightly More Efficient: Recent net returns per acre after taxes averaged 6 percent on very large Western wheat farms as compared to an average of 5 percent for all units studied. Large wheat farms have some advantage over smaller operations through discounts on purchased inputs and in obtaining premium prices when marketing grain. More large wheat farms are likely, as farmers seek to use the competitive edge they offer. But net returns are believed to be too low to induce nonfarm investors to put their money into wheat farming.

Machine Harvest of Peaches Evaluated. Harvesting California's cling peaches is still largely a hand-labor operation requiring nearly 3 million hours of labor a year. In 1970 only 10 percent of the crop was harvested mechanically. But an ERS study suggests more machine harvesting is on the way. At 1970 wage rates, mechanical harvesting would pay off for producers with over 37 acres of mature peaches. With wage rates a fourth higher, mechanization would be profitable for producers with over 29 acres. Mechanization of peach harvesting will require large adjustments by both growers and workers.

Data Bank in Progress: A versatile computer data bank being developed by ERS will expand the usefulness of information from periodic surveys of costs and returns for regional farm types. The data bank will give quick access to production practices and costs for a wide range of specific farm enterprises and for whole-farm budgets on typical farms.

Farm Fuel Monitoring: Preliminary estimates by ERS show farmers use 3 percent of U.S. energy supplies; by 1980 farm energy use could grow by half. Farmers continue to replace gasoline with diesel power, which uses up to a third fewer gallons for the same jobs. Research is underway to sharpen these estimates. Fuel use in fertilizer and other input industries and in food processing and distribution also will be monitored. The food industry requires an estimated 9 percent of U.S. petroleum fuel supplies. Methods will be developed to estimate effects of changes in fuel prices on farm fuel use, impacts on use of other inputs, production levels, and fuel distribution patterns.

2. Improving Food Marketing Efficiency: This area monitors changes in marketing efficiency and researches food industry factors that affect it. Sharply increasing food prices in recent years, along with imposition of wage and price controls that limit wage increases and profit margins in the food industry, have heightened concern over the performance of this sector and increased requests for current information from ERS.

This information consists of several indicators of performance. Current statistics cover the total cost of marketing food grown on U.S. farms, as well as the changing spreads between farm and retail costs of foods. Performance is also measured in terms of productivity of labor and other inputs used in marketing food, the efficiency of pricing systems for farm commodities, and the success of food and fiber marketers in delivering the kinds of products and services that consumers want.

Research goals in this area include identifying food industry changes and their impacts, pinpointing potential market opportunities for farm commodities, and evaluating public transportation policies affecting farm and food products.

Labor and Profit Costs Quantified: Research was begun in FY 1973 to delineate the cost and profit components of margins charged at each processing and distribution level for selected food items including beef, pork, bread, milk, apples and oranges. With additional funds made available by the Congress, this work was expanded in FY 1974. It will help identify the effects on food costs of such major factors as labor, packaging, transportation, advertising and profits and indicate major areas for possible cost reductions and increased efficiencies. Some difficulties in measuring costs and profits of margins relate to obtaining sufficient data with the available resources, allocation of overhead and other joint costs, and availability of data from the industry.

Futures Trading Studies Planned: Two studies will be made in support of the regulatory mission of the Commodity Exchange Authority. One will focus on the problems of detecting and preventing futures price distortions, and the adequacy of current trading rules. The second will recommend improvements in the reporting systems used to gather trading data for regulatory purposes. The CEA and futures industry will cooperate.

Upcoming Research: Research is beginning on the efficiency of capital and labor use in the food industry, better intelligence on away-from-home eating business, trends in convenience food sales, and impact of substitution of vegetable protein for meat.

Based on a forthcoming survey of livestock shippers and the unregulated truckers who serve their needs, ERS will examine the question of whether regulation is needed to assure service at competitive rates. Completion of the study is expected in FY 1975.

Farm Export Research

Work in this area includes (1) maintaining an ongoing appraisal of the current food and agricultural situation in foreign countries, (2) analyzing and forecasting U.S. exports of farm products, world trade, and prices, (3) developing long-term projections of supply and demand for farm products abroad, and (4) assessing financial and monetary conditions in countries that buy our farm products either commercially or under concessional terms.

During the past year the foreign market for farm products assumed new prominence. Although new trade relationships with the USSR and People's Republic of China received much publicity, our farm exports advanced strongly to every region. Total value of these exports shot from \$8 billion in fiscal 1972 to \$13 billion in fiscal 1973, and helped to improve the U.S. trade balance. An evaluation of agriculture's contribution to the U.S. balance of payments indicates that the net contribution increased from \$1.2 billion in fiscal 1972 to \$5.0 billion in fiscal 1973.

World Agricultural and Food Situation: In 1972 the world crop of cereal grains declined 3 percent compared with recent trend increases of 3 percent annually. Crops were poor in India, China, Southeast Asia, the Soviet Union, Australia, and much of Africa. However, in 1973 recovery was widespread and prospects for 1973/74 point to record grain crops. Supplies of grain should be adequate to allow increases in total and per capita disappearance. World production of meat in 1973 showed little gain and milk production in major dairy countries is estimated to be about the same as in 1972.

Europe Will Import Less Grain by 1980: Output of grain, especially of feed grains, is growing fast enough in Western and Eastern Europe to accommodate livestock and population increases. France is leading in a doubling of Western Europe's corn production during this decade; net corn imports for the region will drop from the current level of about 13.5 to 12 million tons by 1980. We have supplied about 60 percent of their corn imports. Although Eastern Europe will boost its feed production, there will be a growing opportunity to export oilseed products to this region for use as high-protein feed supplements.

Trade With the Soviet Union: The progress of crops in the Soviet Union during 1973 was closely monitored and analysts worked closely with other experts in the Department to evaluate the impact on Soviet import requirements. A study of the longer-term prospect for the Soviet feed-livestock economy is underway. Preliminary results indicate that, despite expectations of major advances in the level of grain production, a sizeable gap between Soviet feed energy requirements and availabilities from domestic production is likely to occur during the next decade if a livestock program reasonably consistent with consumer demands is to be sustained.

Representatives of ERS participated in the working group on agricultural economic information and research which met in Russia in November of 1973. Agreements were reached for considerable additional agricultural production and distribution information to be received from the USSR. Also, semi-annual meetings are to be held to discuss current crop conditions and trade prospects.

Market for U.S. Rice Exports: The U.S. plays a major role in world rice trade and has accounted for more than a quarter of the rice moving in world trade since 1967. The current world rice market is characterized by a low level of supplies and strong demand that have combined to push prices to record levels. This contrasts with the situation a few years ago when the level of world production was high enough to result in stock accumulation and downward pressure on prices. ERS is studying the impact of several alternative policies on rice production and trade for the major rice producing countries with special emphasis on the market for U.S. rice exports.

Devaluation Helped Increase Farm Exports: About four-fifths of U.S. farm exports go to nations where, as a result of dollar depreciation, foreign currency prices could be cheaper than they otherwise would have been. However, not all of our exports to these nations are free to benefit from dollar depreciation because the

effects may be largely or fully offset by non-tariff barriers. Research indicates that about half of our agricultural exports go to nations where there are potential benefits from devaluation that are not negated by non-tariff barriers.

Trade Research Planned: Revised projections of farm exports through 1985 are slated for fiscal year 1974. In addition, researchers will examine how economic progress influences the food import needs of other countries, what technological advances are likely to fuel future green revolutions in Asia, and the growing competition of Brazilian exports of corn, soybeans, and livestock products.

Environmental and Resource Development Research

1. Improving Environmental Quality and Impact of Pollution Abatement: Research thrusts include (1) identifying sources and amounts of agricultural wastes; (2) assessing the economic costs of measures to curb pollution from farming and agricultural processing; (3) determining the economic and social impacts of alternative environmental quality standards and restrictions; and (4) evaluating institutional needs to finance and manage environmental clean-up. The research is carried out in cooperation with other USDA and Federal agencies concerned with environmental issues, including EPA.

Research in this area took on added significance during the past year as demand for U.S. farm products escalated. The demand has led to farming more land and the use of more inputs to increase yields which adds to the potential for pollution. Actual and proposed restrictions on the use of chemicals and feed additives and proposed water pollution controls on animal feeding facilities will increase production costs and affect the supply and price of agricultural products.

Feedlot Pollution Control: Meeting the proposed effluent limitation guidelines for feedlots would require the animal feeding industry to invest \$800 million in pollution abatement facilities. A significant portion of this cost would fall on small and medium size producers. The economic viability of those producers with water pollution problems would be threatened. The end result would likely be fewer producers. In the short-term, reductions in the supply of pork and milk products would occur. Prices would rise as a result of short supplies and increased production costs.

Discontinuing Farm Use of Lindane and BHC: Banning the use of lindane and benzene hexachloride (BHC) to control insects in livestock production would cost U.S. farmers an additional \$10.4 million annually. Added costs would also be incurred in crop production if alternative insecticides had to be substituted for lindane and BHC.

Eliminating Feed Additives Costly: Restrictions on use of medication in feed under consideration by the Food and Drug Administration would boost livestock production costs. Total elimination could add \$50 million to poultry production costs and over \$400 million to livestock production expenses.

Animal Waste Feeding Expensive: It is technically possible to recycle part of dried animal wastes as feed, but still too expensive. Only the largest poultry operations could profitably use part of their dry layer waste as feed. Anaerobic or land disposal systems will continue to be the most economical manure disposal methods for the near future.

Field Re-Entry Study: In an effort to provide a safe working environment for hired farmworkers, the Occupational Safety and Health Administration (OSHA), Department of Labor, proposed field re-entry intervals between the time a crop is treated with specific organophosphate compounds and the time when workers can safely re-enter treated areas.

The OSHA contracted with ERS to conduct an economic impact study of these proposed standards. Major findings in the ERS report to OSHA are: (1) Production costs would jump \$16.7 million for over 140,000 acres of peaches, mostly in the Southeast; (2) shade grown tobacco production costs could rise \$30-40 per acre; (3) for apple, grape, and citrus production costs would likely remain unaffected; and (4) labor may face brief periods of unemployment until re-entry intervals expired.

Additional Activities: Projects have been initiated to evaluate the effect of changes in fertilizer and pesticide use on farm output and regional production patterns. Alternatives to pesticide use are being studied. Other projects underway seek better management of dairy farm and feedlot wastes, methods of reducing pollution from preharvest burning of sugarcane, ways of reducing, utilizing and treating agricultural processing wastes, and the management and disposal of solid waste and sludge in rural areas.

2. Improving Management of Land and Water: Research avenues include (1) maintaining an inventory of the Nation's land and water resources, (2) evaluating potential for cropland development, (3) projecting long-term demand for these resources for farming and other uses, (4) improving methods of resource planning and conservation, (5) evaluating organizational arrangements for resource planning and use, and (6) determining how resource ownership and resource policies affect income, wealth, and community growth and development.

Future Land Issues Defined: Projections of long-range land use focus on tomorrow's critical land issues, including demand for food and fiber and derived requirements for land and water, and competing uses for rural land--urban growth, open space, recreation homes, and industrial or commercial development. In the near future (before 1980), environmental considerations and energy shortages will be important in projecting and planning land use.

In 1973, acreage of harvested cropland increased to 318 million acres, 28.5 million acres over 1972. Prospects are highly encouraging for sufficient cropland to produce future domestic food needs while continuing to supply expanded foreign markets. By 1980, as much as 340-350 million acres could be available for crop production, assuming no limitation on crop acreage and favorable cost-price relations for agricultural production. This increase in crop acreage could be met by a more complete use of the land now in farms that has a cropping history plus continuation of cropland development at the current rate. However, even the highest crop acreages currently projected for 1980 and 2000 are no greater than about 310 million acres. These acreages allow for exports even higher than at present, but require continued productivity increases. About 6 or 7 million additional acres of cropland would be required for each additional billion dollars increase in farm exports.

Future energy needs will make their mark on rural lands. We have barely scratched 128 billion tons of strippable coal lying under 45 million acres. Three-fourths of this is West of the Mississippi. Strip-mining promises to become a critical issue during this decade. Meanwhile thermal power electric plants will become more numerous in rural areas, generating chemical and thermal pollution and using 1-1/2 million acres of new right-of-way for power transmission lines within a decade.

While there is no overall shortage of rural land for recreation purposes, and much of it is of little farming value, there is a pressing need for more recreational land accessible to urban populations. Governments at all levels and commercial developers will continue acquiring land for recreational development, but the greatest impact on rural areas may come from individuals purchasing recreational plots and second homesites.

Rural Development Research

The Economic Development Division was shifted into the Rural Development Service early in FY 1974. After the groundwork for the administration of the Rural Development Act of 1972 was established, the regulations published, and the coordination functions required by the Act were designed and in initial stages of operation, this Division is being returned to ERS pursuant to Secretary's Memorandum No. 1832, dated December 4, 1973.

EDD research explores many aspects of rural life: (1) Analyzing characteristics of the rural population; (2) studying changes in the rural manpower picture, including employment, unemployment, and underemployment; (3) studying rural community institutions and services, including local government, health care, education, and housing; and (4) developing profiles of regional and small-area development.

Farm Population Changes: The North Central Region had 44 percent of the U.S. farm population in 1970, while the South had less than 40 percent. Two decades earlier, the South had over half and the North Central States less than a third. Iowa, Minnesota, and Illinois ranked at the top as the States with the most farm people in 1970.

The estimated 1972 farm population was 9.6 million persons, continuing to account for 4.6 percent of the total population. Between 1960 and 1972, the rate of loss in the total farm population averaged 4.1 percent annually, and the proportion of farm people engaged in agriculture who had a nonfarm residence rose from 25 percent in 1960 to 37 percent in 1972. This reflects the tendency, primarily among farm wage-workers, to commute rather than live on the farm.

Hired Farm Working Force Up Slightly: Following declines since 1967, the Hired Farm Working Force (HFWF) increased slightly in 1971 and again in 1972. It numbered 2.8 million persons who did some farmwork for cash wages in 1972, representing a 7-percent increase over 1971. Yearly and daily earnings in 1972 from farm wage work increased in all regions, the largest increase occurring in the West.

Nonmetro Employment Growing: The nonmetro employment growth rate, 1970-73, was twice that of metro areas--2.6 percent nonmetro compared with 1.2 percent for metro areas. Overall nonfarm employment presents an even more striking contrast--3.5 percent growth rate in nonmetro areas, 1.4 percent in metro areas.

Farm Real Estate Taxes Continued Upward: For the 29th consecutive year, taxes on farm real estate increased. In 1972, these taxes totaled \$2.77 billion, 4.1 percent above 1971, but the lowest percentage increase since 1964. Taxes were higher in 1972 than 1971 in 42 States, and were lower in the rest. Oklahoma tax per acre was up 21.7 percent; 7 other States had increases of more than 10 percent.

Rural Health Care Inadequacy Persists: In a review of health care statistics, rural areas were found to have more general practitioners, hospitals, and hospital beds per 100,000 population than urban areas. Yet specialists are sorely needed, and rural areas were well behind cities in the number per thousand people of all doctors, as well as of dentists and nurses. Rural people must travel much farther to their hospitals, and are likely to get less comprehensive medical services.

Mobile Homes Filling a Need: More than nine out of ten mobile homes recently surveyed in New Hampshire are owner-occupied. Over half of the households have only one or two members. Income of the occupants is generally below that of New Hampshire families as a whole. Median cost of new mobile home units ranged between \$6,500 and \$7,400, well below the cost of conventional housing in the State. For many low-to-moderate income families, mobile homes appear to be providing adequate shelter.

Food and Nutrition Research

This research program is designed to develop basic information concerning our food consumption trends, determine the effects of income, prices and other variables on

food spending patterns, and evaluate the effectiveness of USDA's food stamp, school lunch, and other nutrition and nutrition education programs.

Less Protein Foods Available: Current statistics developed on per capita availability of 60 major foods or food categories have been especially important in the past year. They showed that 12 pounds less red meat were available per person in 1973 than the 189 pounds of 1972, along with declines in supplies of chicken, eggs, dairy products, and fish.

New Projects Formulated: In fiscal year 1974, in cooperation with the Food and Nutrition Service, ERS will attempt to isolate the factors of income, family background, and rural-urban location that affect participation in the school lunch programs.

A major effort to upgrade food consumption statistics is being formulated. The latest comprehensive survey of family food-buying habits is over 10 years old.

Technical Assistance, Research and Training to Aid Foreign Agricultural Development

1. Training Foreign Participants: During fiscal year 1973, 2,828 foreign nationals received more than 9,600 man-months of training, both in the United States and in their home countries. These countries are now assuming more responsibility for creating and running their own development programs. Accordingly, an increasing number of training requests are shifting from direct agricultural skills to skills needed to run agricultural programs, such as management, agricultural policy and planning, marketing, and cooperative work. This is underscored by several recent training programs:

Turkish Middle Managers Trained: Following training of 80 Turkish Government executives over several years, an extensive middle management training program was initiated in fiscal 1973. Twenty mid-level officials completed the 6-month course and now will conduct similar middle-management training in Turkey.

Skills in Evaluating Project Benefits Taught: An ERS group conducted courses in Washington, Turkey, and Guyana on how to determine the costs and benefits of various development alternatives. Courses are being held in Jordan and the Dominican Republic and have been requested by several other countries for fiscal 1974.

2. Direct Assistance by USDA Professionals: Under this program, USDA experts are selected and sent to work with developing countries in their efforts to increase farm output, improve food distribution and quality of diets, improve use of and protection of land and water resources, and upgrade their agricultural institutions. Some 360 USDA professionals were involved in this work during fiscal 1973. Activities, by field, included:

Agricultural Research: Work continued on the development and introduction of new varieties of maize, sorghum, and millet in Africa and on the seed maintenance project in Puerto Rico and the United States. Work on control of tsetse flies was shifted from Rhodesia to Tanzania.

Economic Research: A major effort produced basic information on Vietnam's agriculture and analytical tools for planning. Results were put to good use as the Minister of Agriculture formulated a post-war reconstruction program. Current studies are exploring market potentials for various Vietnamese products, with an eye to increasing economic self-sufficiency.

Another project focused on the priorities for Latin American export expansion. The initial phase concerned overseas markets for minor Colombian commodities. Economic assistance work continued in several other countries as well during fiscal 1973.

Bettering World Nutrition: ERS has leadership in achieving AID/USDA goals of improving quality of diets in developing countries. Preliminary tests were made on a new beverage powder for overseas donation; a project to compare alternative approaches to better nutrition was implemented; a feasibility study of a technique for extracting protein from soybeans was completed, and a study of vitamin A fortification was made in Pakistan.

More Short-Term Advisors Used: Despite recent major cutbacks in U.S. foreign assistance programs, USDA involvement is expected to continue near previous levels because of AID emphasis on agricultural development. More emphasis will be given in Asia, Vietnam, and South America to short-term advisors sent to work on specific development problems, rather than staffing of resident positions. In Africa, however, USDA has been asked to fill more resident positions as reliance on private contracting diminishes.

Two Countries Buy Services: For the first time, two nations, Iran and Turkey, entered into direct agreements with USDA to buy technical assistance. Seven USDA advisors in Iran will concentrate on livestock and feeding improvement efforts. This may lead to larger imports of breeding stock and feed grains, in line with USDA foreign market development goals.

The Turkey-USDA agreement provides for special cooperation with the Turkish Government to achieve farm development in the areas where opium poppy growing was recently banned.

3. Reimbursement from the Agency for International Development: The following table shows the distribution of actual reimbursements in fiscal year 1973 to the U. S. Department of Agriculture for technical agricultural assistance services requested by AID and other requesting agencies, and estimated reimbursements for fiscal years 1974 and 1975. The estimates are subject to change as detailed agreements are worked out.

Agency and Project	Fiscal Year 1973		Fiscal Year 1974		Fiscal Year 1975	
	Actual	Man- :Years	Estimated	Man- :Years	Estimated	Man- :Years
	Amount		Amount		Amount	
<u>Agricultural Marketing Service:</u>						
Special Projects.....	\$38,739	1.0	\$83,000	2.0	\$83,000	2.0
Total, Agricultural Marketing Service.....	38,739	1.0	83,000	2.0	83,000	2.0
<u>Animal and Plant Health Inspection Service:</u>						
Training.....	13,508	.7	7,600	.5	7,600	.5
Special Projects.....	86,992	2.3	82,100	2.2	82,100	2.2
Total, Animal and Plant Health Inspection Service.....	100,500	3.0	89,700	2.7	89,700	2.7
<u>Agricultural Research Service:</u>						
Training.....	85,671	6.1	95,900	5.3	97,200	5.3
Special Projects.....	958,160	36.6	840,200	30.9	846,900	30.9
Total, Agricultural Research Service.....	1,043,831	42.7	936,100	36.2	944,100	36.2
<u>Agricultural Stabilization and Conservation Service:</u>						
Training.....	18,043	1.3	18,500	1.3	18,600	1.3
Special Projects.....	7,657	.3	15,300	.5	15,400	.5
Total, Agricultural Stabilization and Conservation Service.....	25,700	1.6	33,800	1.8	34,000	1.8
<u>Cooperative State Research Service:</u>						
Training.....	477	--	1,000	--	1,000	--
Total, Cooperative State Research Service.....	477	--	1,000	--	1,000	--
<u>Economic Research Service:</u>						
Training.....	895,000	51.0	960,000	53.0	960,000	53.0
Special Projects.....	2,625,000	72.0	1,972,000	71.0	1,935,000	75.0
Subsistence.....	5,647,329	--	4,000,000	--	4,000,000	--
Total, Economic Research Service.....	9,167,329	123.0	6,932,000	124.0	6,895,000	128.0

Agency and Project	Fiscal Year 1973			Fiscal Year 1974			Fiscal Year 1975		
	Actual			Estimated			Estimated		
	Amount	Man- :Years:	Amount	Amount	Man- :Years:	Amount	Amount	Man- :Years:	Amount
<u>Extension Service:</u>									
Training.....	75,326	4.0:	64,057		3.0:	64,112		2.0	
Special Projects.....	677,413	15.0:	384,381		12.0:	158,222		3.0	
Total, Extension Service.....	752,739	19.0:	448,438		15.0:	222,334		5.0	
<u>Farmer Cooperative Service:</u>									
Training.....	38,700	2.0:	35,000		2.0:	37,169		2.0	
Special Projects.....	83,779	2.0:	44,425		1.0:	45,121		1.0	
Total, Farmer Cooperative Service.....	122,479	4.0:	79,425		3.0:	82,290		3.0	
<u>Farmers Home Administration:</u>									
Training.....	98,000	6.0:	71,000		5.0:	72,000		5.0	
Special Projects.....	188,000	5.0:	102,000		2.0:	80,000		2.0	
Total, Farmers Home Administration.....	286,000	11.0:	173,000		7.0:	152,000		7.0	
<u>Forest Service:</u>									
Training.....	57,000	4.0:	63,000		3.0:	63,000		3.0	
Special Projects.....	211,000	12.0:	450,000		15.0:	450,000		15.0	
Total, Forest Service.....	268,000	16.0:	513,000		18.0:	513,000		18.0	
<u>Office of Management Services</u>									
Training.....	95,800	6.5:	98,300		6.5:	111,700		6.5	
Special Projects.....	88,600	6.0:	91,000		6.0:	103,400		6.0	
Total, Office of Management Services.....	184,400	12.5:	189,300		12.5:	215,100		12.5	
<u>Rural Electrification Administration:</u>									
Training.....	1,898	1.2:	3,380		1.1:	3,960		1.1	
Total, Rural Electrification Administration.....	1,898	1.2:	3,380		1.1:	3,960		1.1	

Agency and Project	Fiscal Year 1973		Fiscal Year 1974		Fiscal Year 1975	
	Actual		Estimated		Estimated	
	Amount	:Man- :Years	Amount	:Man- :Years	Amount	:Man- :Years
<u>Soil Conservation Service:</u>						
Training.....	82,000	5.0:	95,000	5.0:	105,000	5.0
Special Projects.....	297,000	9.0:	450,000	12.0:	670,000	16.0
Total, Soil Conservation Service.....	379,000	14.0:	545,000	17.0:	775,000	21.0
<u>Statistical Reporting Service:</u>						
Training.....	55,000	4.0:	68,000	4.0:	68,000	4.0
Special Projects.....	189,000	7.0:	250,000	10.0:	260,000	10.0
Total, Statistical Reporting Service.....	244,000	11.0:	318,000	14.0:	328,000	14.0
Total, United States Department of Agriculture.....	12,615,092	260.0:	10,345,143	253.3:	10,338,484	251.3
<u>Recapitulation:</u>						
Training.....	1,516,423	91.8:	1,580,737	88.7:	1,609,341	87.7
Special Projects.....	5,451,340	168.2:	4,764,406	164.6:	4,729,143	163.6
Subsistence.....	5,647,329	--	4,000,000	--	4,000,000	--
Total, United States Department of Agriculture.....	12,615,092	260.0:	10,345,143	253.3:	10,338,484	251.3

Estimated obligations and man-years in FY 1974 for the Economic Research Service
are distributed by State as follows

<u>State</u>	<u>Obligations</u>	<u>Man-Years</u>
Arizona	149,231	5
Arkansas	580,421	26
California	676,138	26
Colorado	129,736	5
District of Columbia	22,805,004	783
Florida	116,084	5
Georgia	192,487	7
Illinois	160,701	7
Indiana	157,619	6
Iowa	15,821	---
Kansas	133,611	5
Kentucky	31,817	1
Louisiana	109,397	5
Michigan	594,696	21
Minnesota	98,368	4
Mississippi	163,553	7
Missouri	62,186	2
Montana	96,573	4
Nebraska	509,000	23
New Hampshire	63,159	2
New York	42,233	1
North Carolina	154,706	4
North Dakota	91,303	4
Ohio	300	---
Oklahoma	159,572	6
Oregon	101,686	5
Pennsylvania	379,974	15
South Carolina	151,229	6
South Dakota	27,677	1
Tennessee	25,151	1
Texas	107,862	4
Utah	252,302	10
Virginia	64,355	2
Washington	117,660	4
Wisconsin	10,000	---
Total, United States	28,531,612	1,007
Outside United States	1,972,000	71
Total, ERS	30,503,612	1,078

PASSENGER MOTOR VEHICLES

The number of vehicles operated by the Service was reduced from 9 to 6 in fiscal year 1970 and will be reduced to 5 for fiscal year 1975.

The passenger motor vehicles are used for necessary field travel in carrying out the mission of the Economic Research Service. The automobiles are used for travel to farms, market terminals, offices of produce dealers and truckers, processing plants, canneries, stockyards, tobacco auction markets, cotton gins, plantation and compress operators, railroad yards, piers, grain elevators, and warehouses, where use of common carrier or GSA vehicles is not feasible.

Age and mileage data for passenger motor vehicles on hand as of June 30, 1973, are as follows:

Age-Year Model	Age Data		Lifetime Mileage (thousands)	Mileage Data	
	Number of Vehicles	Percent of Total		Number of Vehicles	Percent of Total
1968 or older	5	83	80-100	1	17
1969	1	17	60-80	3	50
1970	--	--	40-60	2	33
1971	--	--	20-40	--	--
1972	--	--	<u>Under 20</u>	--	--
1973	--	--			
Total	<u>6</u>	<u>100</u>		<u>6</u>	<u>100</u>

